# GLOBAL CLIMATE HIGHLIGHTS

## *MAJOR CLIMATE EVENTS AND ANOMALIES AS OF JUNE 13, 1992*

*1. Western United States:*

**HEAT WAVE ENDS.**

Unseasonably cool weather, with temperatures averaging as much as 3°C below normal, ended the heat wave across much of the West; however, temperatures in parts of Montana averaged up to 6°C above normal [Ended at 21 weeks].

*2. North-Central United States:*

**DRY CONDITIONS PERSIST.**

Precipitation totals were generally below 15 mm, with six-week moisture deficits of up to 145 mm reported [11 weeks].

*3. South-Central United States:*

**HEAVY RAINS CONTINUE.**

Torrential downpours soaked the Gulf Coast with as much as 180 mm of rain, and precipitation surpluses since early May reached 150 to 200 mm in Texas [11 weeks].

*4. Central and Eastern United States:*

**TEMPERATURES RETURN TO NORMAL.**

Weekly departures reached +3°C in the East as cool weather ended; however, pockets of chilly weather, with temperatures averaging as much as 4°C below normal, were observed across the central states [Ended at 4 weeks].

*5. Peru:*

**STILL ABNORMALLY WARM.**

Temperatures again averaged as much as 3°C above normal along the coast of Peru last week [11 weeks].

*6. Central South America:*

**SOMEWHAT DRIER CONDITIONS PREVAIL.**

Up to 110 mm of rain drenched central Argentina, where six-week precipitation surpluses climbed to 300 mm. To the north and east, a third successive week of relatively dry weather ended the wet spell in northeastern Argentina while 20 to 60 mm of rain dampened northern Uruguay and adjacent Brazil [Ending at 8 weeks].

*7. Northern Europe:*

**RELIEF FOR CENTRAL EUROPE, BUT STILL DRY FARTHER NORTH.**

Moderate rains of 30 to 60 mm brought some relief to cen Europe, but less than 20 mm of rain was reported ac Scandinavia and north-central Europe. During the past six we most of Norway, Sweden, and Denmark received less than ha normal precipitation totals [10 weeks].

*8. Southwestern Europe:*

**MORE WET WEATHER.**

Up to 100 mm of rain drenched the area as moisture surpl since early May reached as high as 145 mm [3 weeks].

*9. Middle East:*

**COLD SNAP ENDS.**

Temperatures approached 4°C above normal in some location the unusually cool conditions ended [Ended at 13 weeks]

*10. Southwestern Asia:*

**RELIEF IN EASTERN AREAS, WET ELSEWHERE.**

Precipitation totaled only 20 to 40 mm at scattered location northeastern Iran and adjacent sections of the Commonwealt Independent States, but up to 75 mm of rain was measured furt west. Press reports indicate additional flooding affected Iran e in the week as moisture surpluses since early May climbed to mm at some locations [5 weeks].

*11. Southern China and Western Taiwan:*

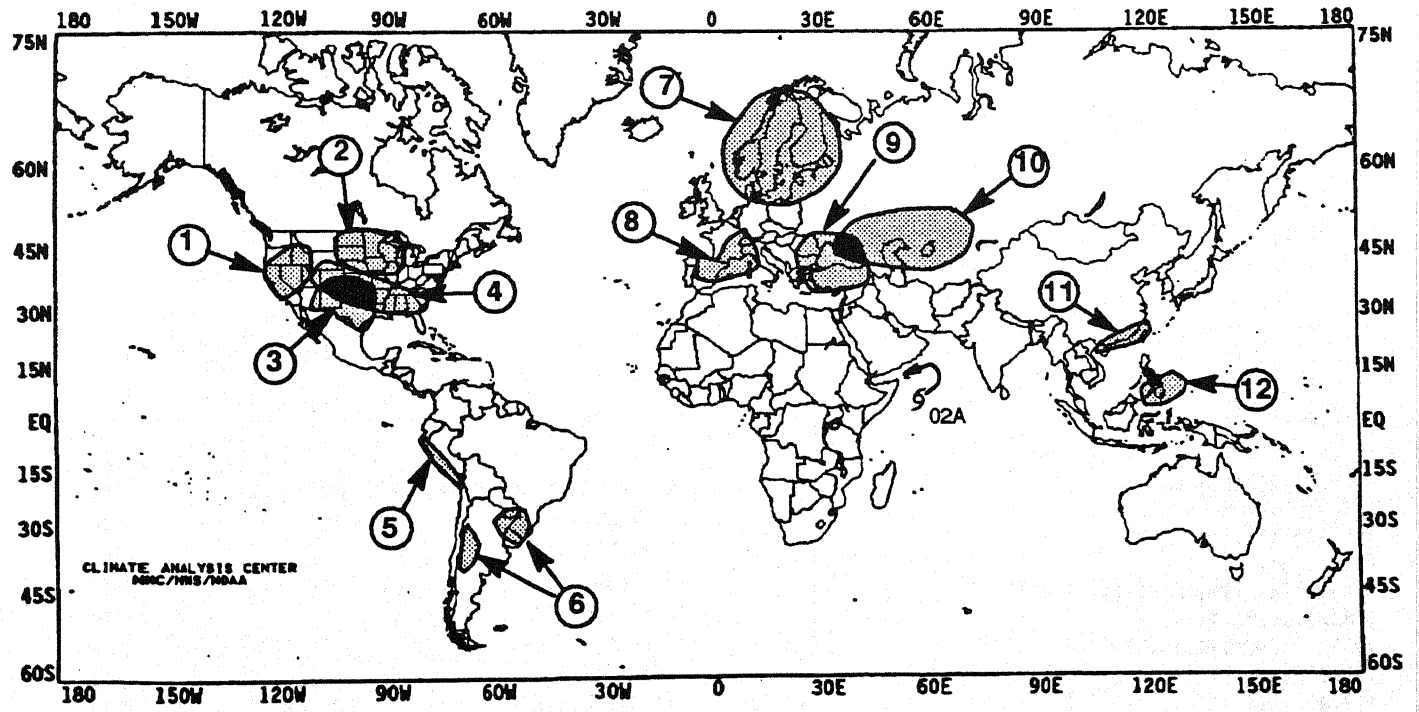
**HEAVY RAINS DELUGE REGION.**

Torrential downpours of 150 to 475 mm inundated the area, some stations reporting daily amounts of up to 175 mm [Epis Event].

*12. Philippines:*

**RAINS BRING RELIEF.**

Widespread ample rains of up to 100 mm provided short-t relief from the dryness, especially in southeastern Asia northern sections of the Philippines; however, long-term dry persisted, particularly across Mindanao [Ending at 25 weeks]




**EXPLANATION**

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.
MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

# UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

*FOR THE WEEK OF JUNE 7–13, 1992*

Heavy rains and severe weather continued to plague the southern Plains as the fifth consecutive week of inundating rain left many fields saturated, delaying winter wheat harvesting and cotton planting and deteriorating planted cotton, according to press reports. A number of cities in Texas had record rainfall for the first five months of the year and already are nearing or have exceeded their annual normal. Scattered totals of two to six inches were measured throughout the state last week, except in the Big Bend area. Intense thunderstorms, some spawning tornadoes, hail, and high winds, continued for a second successive week across much of the central Plains, lower Mississippi Valley, and Southeast. Rainfall totals of three to nine inches fell in a majority of the Southeast, generating localized flooding but easing earlier concerns regarding Spring's deficient rainfall in some areas. In contrast, little or no rain again fell in the agricultural areas of the Midwest, northern Plains, and Far West. Hot dry weather abetted wildfires that burned 500 acres near Klamath Falls, OR and forced more than 1000 people to evacuate their homes, according to press reports. Dry conditions, however, allowed southern New England to recover from the torrential rains and floods at the end of the previous week.

The week commenced with more thunderstorms barraging the Great Plains with hail, high winds, and heavy rains. Winds gusting to 82 mph caused damage in Carlsbad, NM, lightning set two homes on fire in Knox City, TX, and heavy rain left up to a foot of water in Vernon, TX. Elsewhere, showers and thunderstorms were widespread over the Mississippi and upper Ohio Valleys, Great Lakes, Appalachians, mid–Atlantic, and Southeast. In upstate New York, wind downed power lines and damaged several buildings. By Tuesday, rains continued to be widespread from the Rockies to the Atlantic coast, with locally heavy amounts producing flash floods in southwestern Missouri, central Nebraska, eastern Kansas, and across the Southeast. In Alaska, an Arctic cold front brought record low temperatures to central portions of the state.

At mid–week, showers and thunderstorms developed ahead of a slow–moving cold front and brought heavy rains to the lower Mississippi Valley and Southeast. More than four inches inundated the southern Appalachians. Showers and thunderstorms were also scattered across the central and southern Plains, middle Mississippi Valley, and Northwest. During the latter part of the week, heavy rain continued across parts of the South with five inches in six hours drenching Muscle Shoals, AL. Meanwhile, a strong cold front brought rain to the Northwest with snow in the higher elevations. Daily record low temperatures were broken in northern California and northern Nevada on Saturday.

According to the River Forecast Centers, the greatest weekly precipitation totals (between two and nine inches) fell over much of the central and southern Plains, lower Mississippi Valley, and Southeast (Table 1). Amounts of more than two inches were also scattered across the western middle Mississippi Valley, the northwestern Plains, the central Appalachians, the central Rockies, the Pacific Northwest, south central Alaska, and eastern Hawaii. Light to moderate amounts were measured in the remainders of the Great Plains, the Mississippi Valley, the Southeast, the mid–Atlantic, the Rockies, the Northwest, and southern Alaska while little or no precipitation fell in the Northeast, the Great Lakes, the Corn Belt, the central and southern Intermountain West, southern California, and the remainders of Alaska and Hawaii.

Unseasonably warm conditions prevailed from the Pacific Northwest and northern Great Basin to the upper Great Lakes and in the Northeast, Alaska, and Hawaii. Late in the week, however, a cold front ushered in much cooler air into the Northwest (Figure 1). Departures of greater than +5°F were recorded in the northern Intermountain West, the northern Rockies, the northern Plains, the northern mid–Atlantic, and southern Alaska (Table 2). Above normal temperatures were also observed along the Gulf, southern Atlantic, and Pacific coasts.

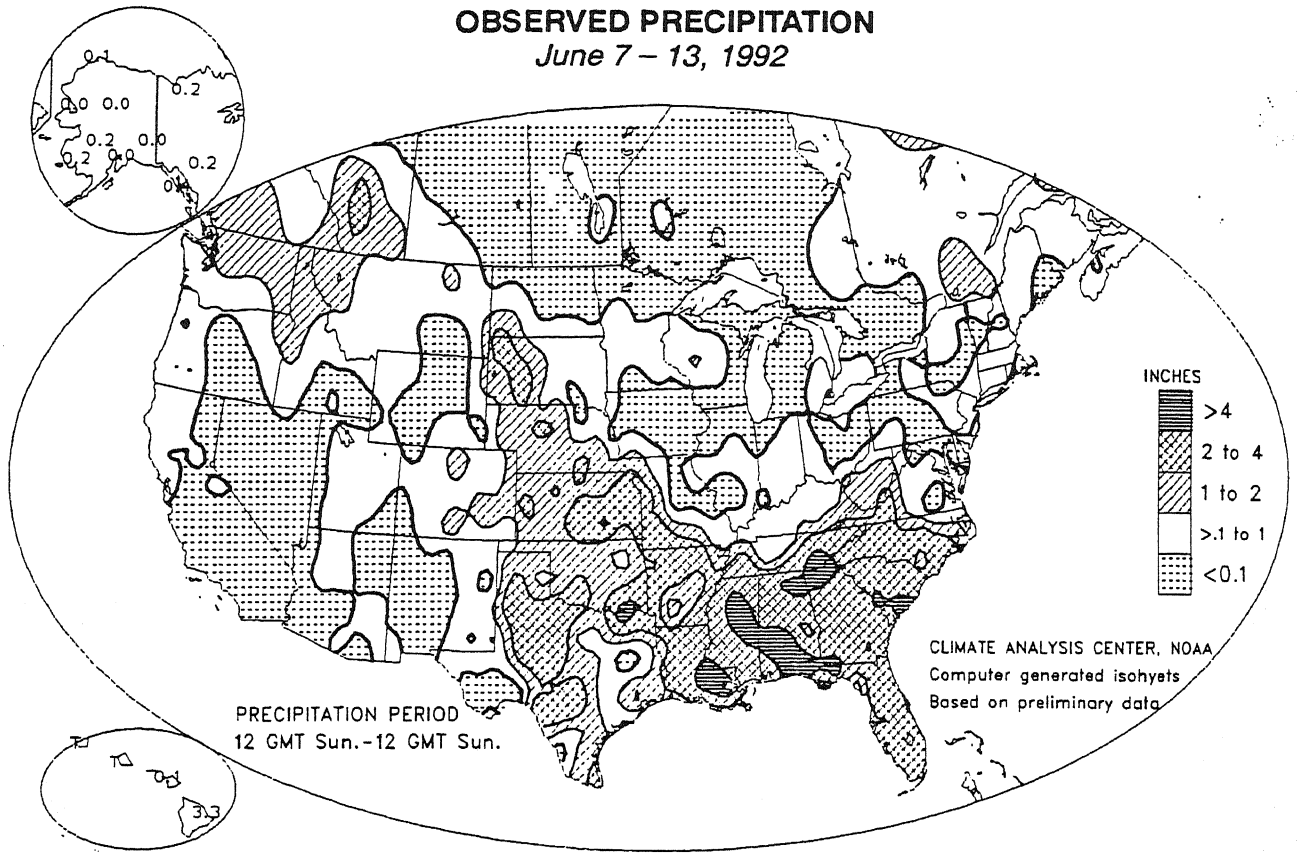
In the contiguous United States, temperatures averaged below normal across much of the southern tier of states. Weekly departures below –5°F were observed in the southern Rockies, the central and southern Plains, and California (Table 3). In Alaska, below normal temperatures were limited to west–central portions of the state.

**TABLE 1. *SELECTED STATIONS WITH 3.50 OR MORE INCHES OF PRECIPITATION DURING THE WEEK OF JUNE 7–13, 1992***

| STATION | TOTAL (INCHES) | STATION | TOTAL (INCHES) |
|---|---|---|---|
| MUSCLE SHOALS, AL | 6.93 | MACON/WARNER–ROBINS AFB, GA | 4.19 |
| BATON ROUGE, LA | 6.89 | CHARLESTON, SC | 4.14 |
| BILOXI/KEESLER AFB, MS | 6.55 | JACKSON, TN | 4.06 |
| MERIDIAN, MS | 6.05 | WAYCROSS, GA | 3.95 |
| VALPARAISO/EGLIN AFB, FL | 5.87 | HARRISON, AR | 3.93 |
| TALLAHASSEE, FL | 5.68 | SPRINGFIELD, MO | 3.82 |
| NEW ORLEANS/MOISANT, LA | 5.41 | ANNISTON, AL | 3.80 |
| PENSACOLA, FL | 4.83 | MONTGOMERY, AL | 3.79 |
| GAINESVILLE, FL | 4.75 | GREENWOOD, MS | 3.76 |
| WILMINGTON, NC | 4.45 | HUNTSVILLE, AL | 3.74 |
| HOMESTEAD AFB, FL | 4.36 | COLUMBIA, SC | 3.66 |
| MILTON/WHITING NAS, FL | 4.30 | VALDOSTA, GA | 3.59 |
| MACON, GA | 4.30 | | |

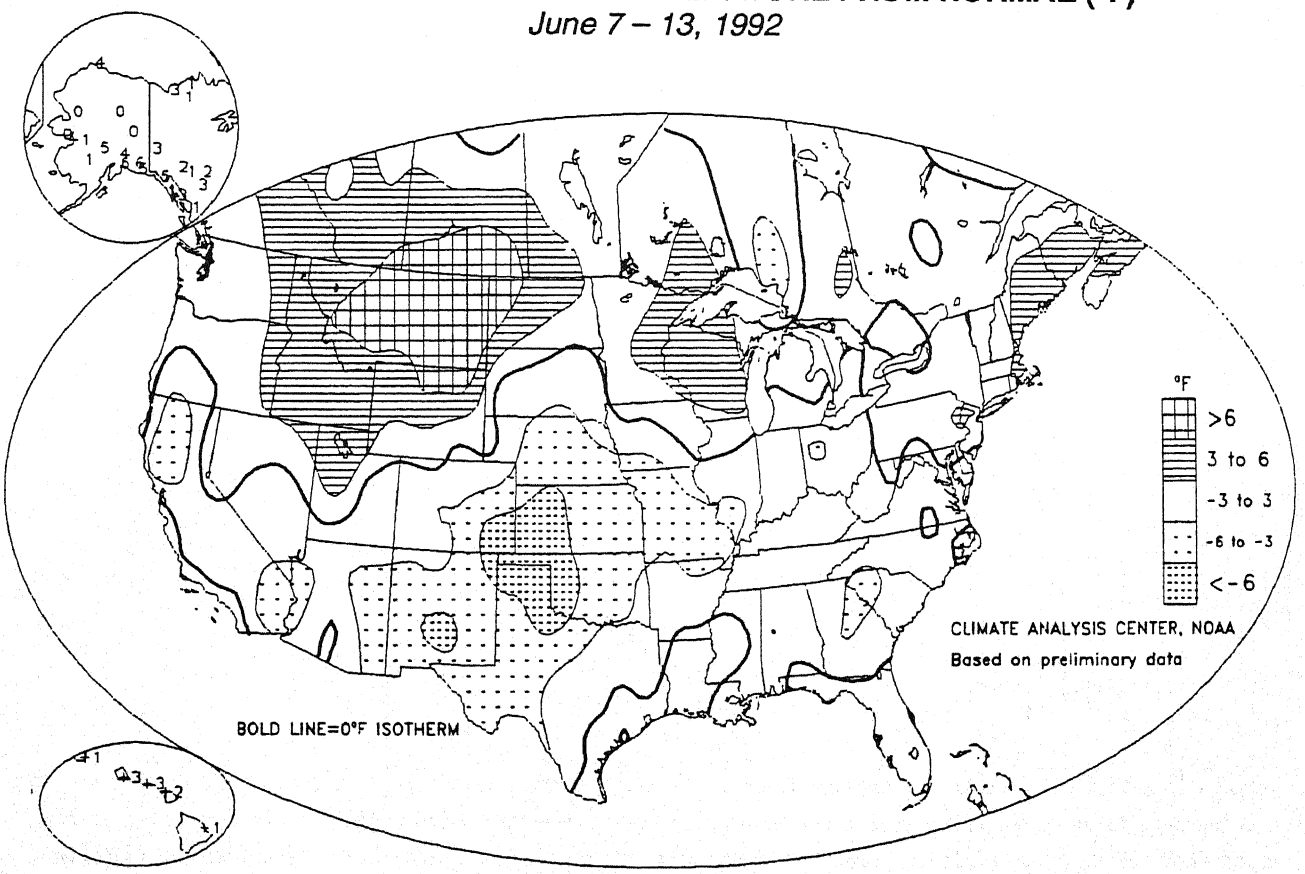
## OBSERVED PRECIPITATION

*June 7 – 13, 1992*




## DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

*June 7 – 13, 1992*



## TABLE 2. *SELECTED STATIONS WITH TEMPERATURES AVERAGING 5.5°F OR MORE ABOVE NORMAL FOR THE WEEK OF JUNE 7–13, 1992*

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|---|---|---|---|---|---|
| MILES CITY, MT | +10.5 | 75.4 | MISSOULA, MT | +6.2 | 64.4 |
| GLASGOW, MT | +10.0 | 72.8 | WORLAND, WY | +6.1 | 69.6 |
| HAVRE, MT | +8.4 | 70.4 | VALDEZ, AK | +6.1 | 56.8 |
| LEWISTOWN, MT | +8.4 | 64.6 | CUT BANK, MT | +6.0 | 62.0 |
| BILLINGS, MT | +7.7 | 70.1 | ANCHORAGE, AK | +6.0 | 59.7 |
| HELENA, MT | +7.7 | 66.5 | GREAT FALLS, MT | +5.9 | 66.3 |
| KODIAK, AK | +7.4 | 56.1 | JUNEAU, AK | +5.9 | 57.9 |
| WILLISTON, ND | +7.3 | 70.2 | YAKUTAT, AK | +5.9 | 54.6 |
| GILLETTE, WY | +7.1 | 67.6 | BOISE, ID | +5.8 | 70.1 |
| BOZEMAN, MT | +7.1 | 62.9 | NEWARK, NJ | +5.6 | 76.2 |
| DICKINSON, ND | +6.4 | 67.7 | BURLEY, ID | +5.6 | 66.8 |
| MINOT, ND | +6.2 | 68.4 | BUTTE, MT | +5.5 | 59.4 |

## TABLE 3. *SELECTED STATIONS WITH TEMPERATURES AVERAGING 5.0°F OR MORE BELOW NORMAL FOR THE WEEK OF JUNE 7–13, 1992*

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|---|---|---|---|---|---|
| GAGE, OK | –8.3 | 67.3 | ENID/VANCE AFB, OK | –5.5 | 71.2 |
| ALAMOGORDO, NM | –8.1 | 70.2 | GALLUP, NM | –5.4 | 58.6 |
| DODGE CITY, KS | –7.1 | 66.4 | PUEBLO, CO | –5.4 | 64.6 |
| HOBART, OK | –6.6 | 71.3 | SALINA, KS | –5.4 | 68.7 |
| GARDEN CITY, KS | –6.5 | 66.8 | CONCORDIA, KS | –5.3 | 67.3 |
| LA JUNTA, CO | –6.3 | 66.5 | CLAYTON, NM | –5.2 | 63.9 |
| DALHART, TX | –6.0 | 66.6 | TRINIDAD, CO | –5.1 | 62.9 |
| REDDING, CA | –5.8 | 69.8 | CARLSBAD, NM | –5.1 | 74.8 |
| TOPEKA, KS | –5.7 | 67.3 | WINSLOW, AZ | –5.0 | 66.2 |
| RED BLUFF, CA | –5.7 | 69.2 | AMARILLO, TX | –5.0 | 68.9 |
| KANSAS CITY/INTL, MO | –5.6 | 68.4 | DEMING, NM | –5.0 | 71.1 |
| TUCUMCARI, NM | –5.6 | 69.9 | TRUTH OR CONSEQUENCES, NM | –5.0 | 71.4 |
| RUSSELL, KS | –5.5 | 67.8 | FT SILL/HENRY POST AAF, OK | –5.0 | 73.1 |
| KANSAS CITY/MUNICIPAL, MO | –5.5 | 69.4 | | | |

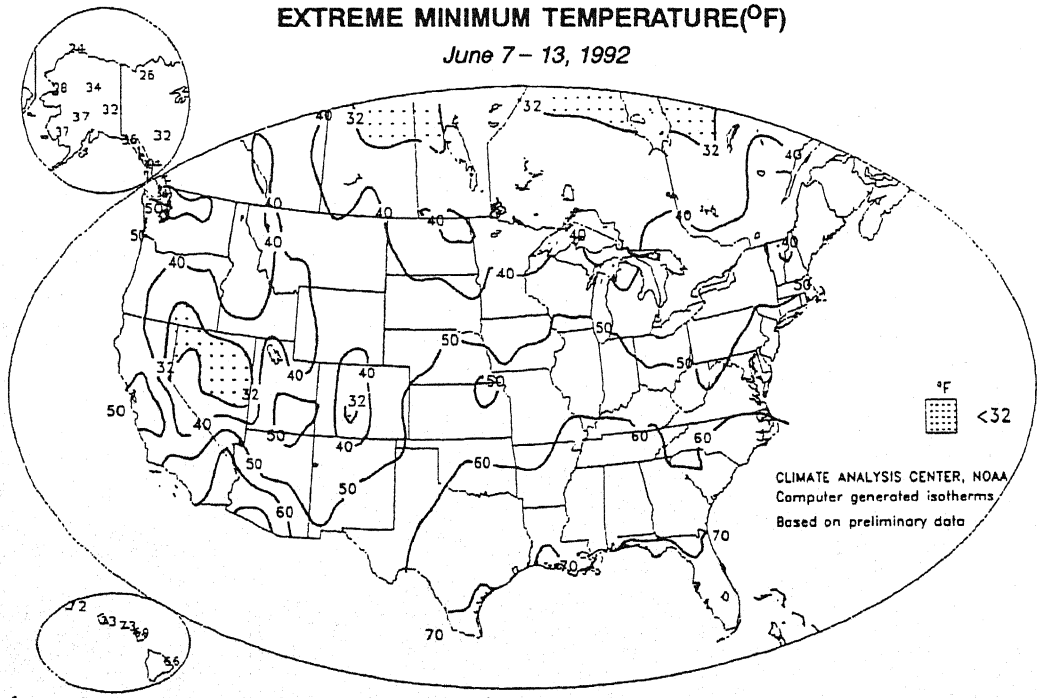
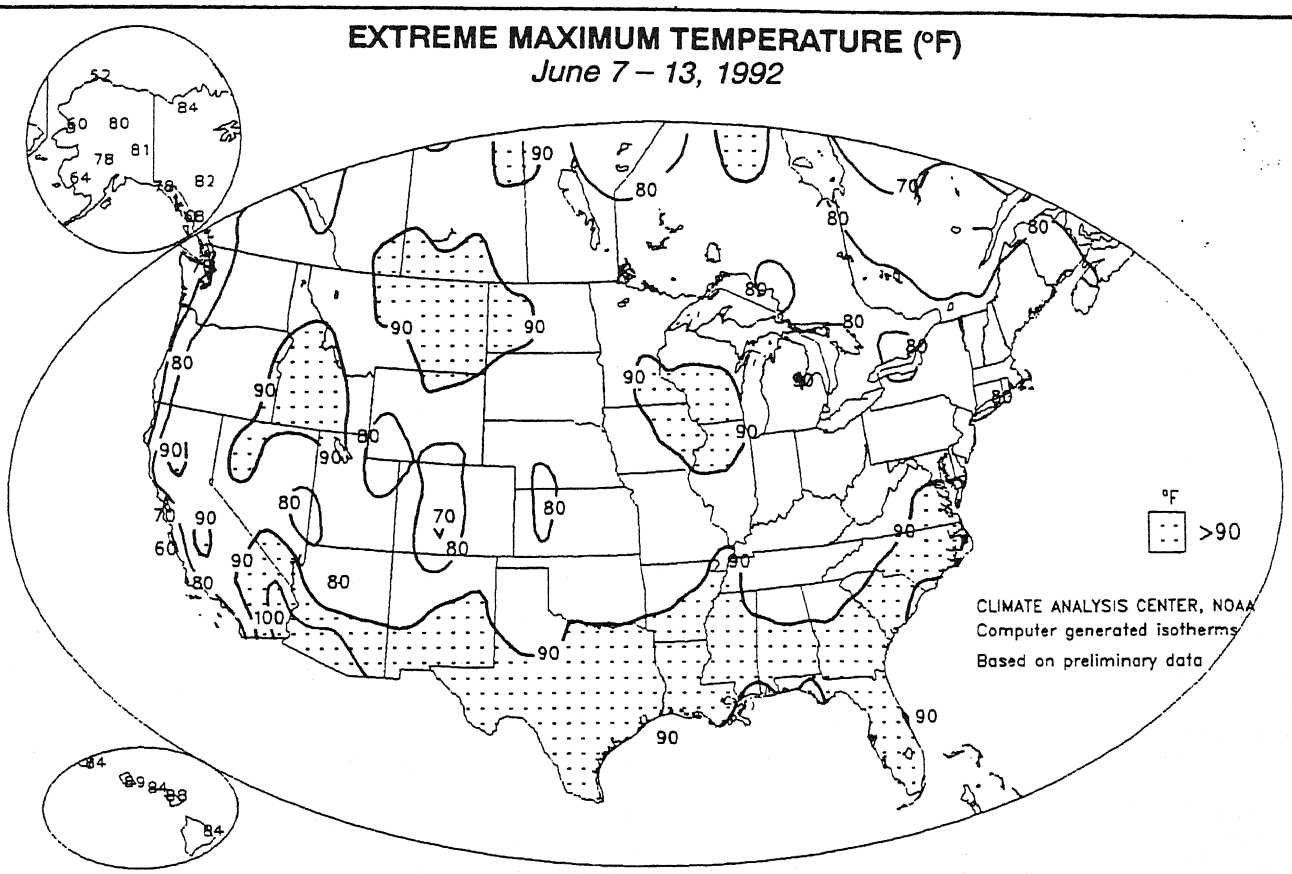



**FIGURE 1.** *Weeks of unseasonably hot weather across the western third of the nation were abruptly interrupted late last week as temperatures dropped into the forties in many areas, with sub-freezing readings afflicting the northern Great Basin and highest elevations of the Rockies. In contrast, milder air swept into the East. Much of the south Atlantic and Gulf Coasts remained above 60°F throughout the week.*

## EXTREME MAXIMUM TEMPERATURE (°F)

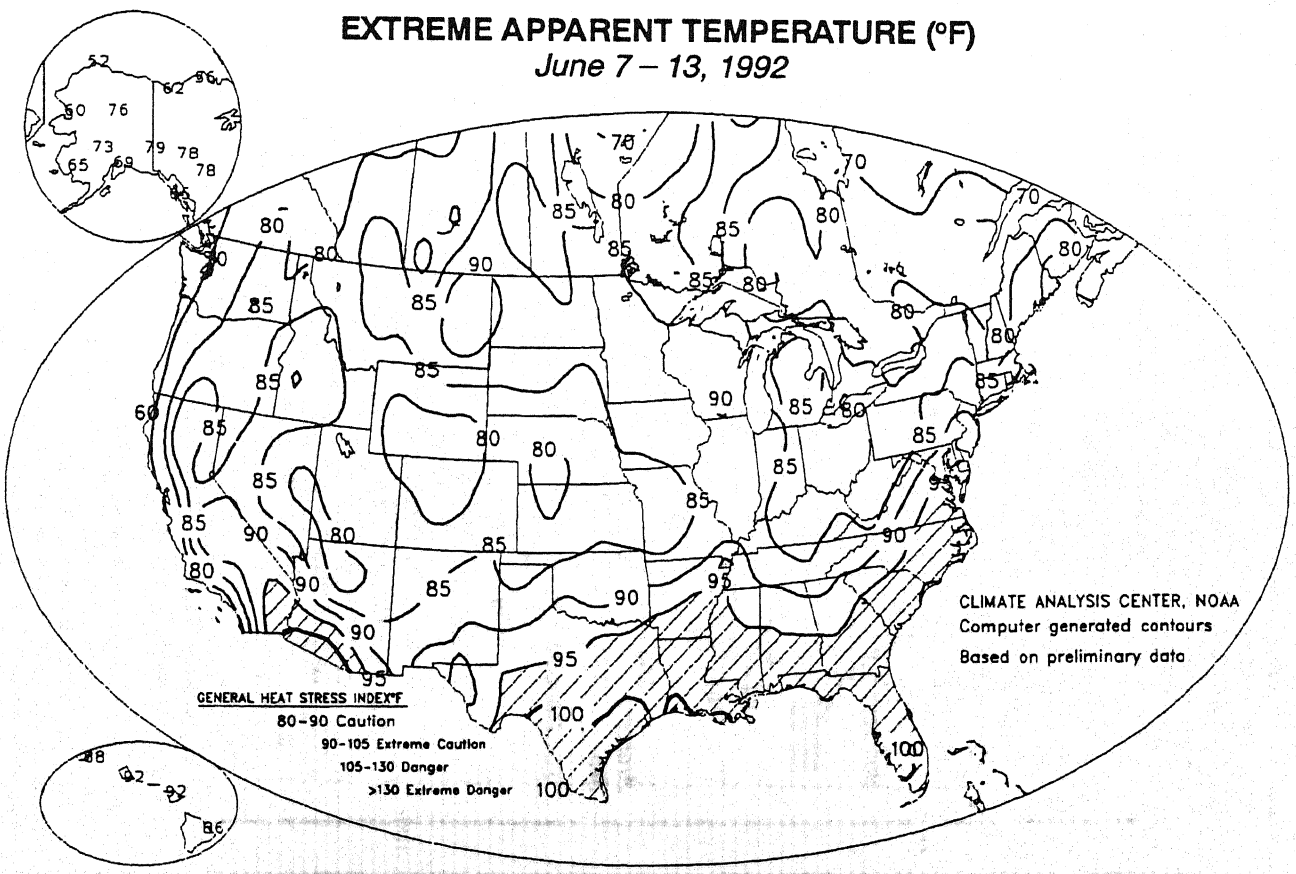
*June 7 – 13, 1992*



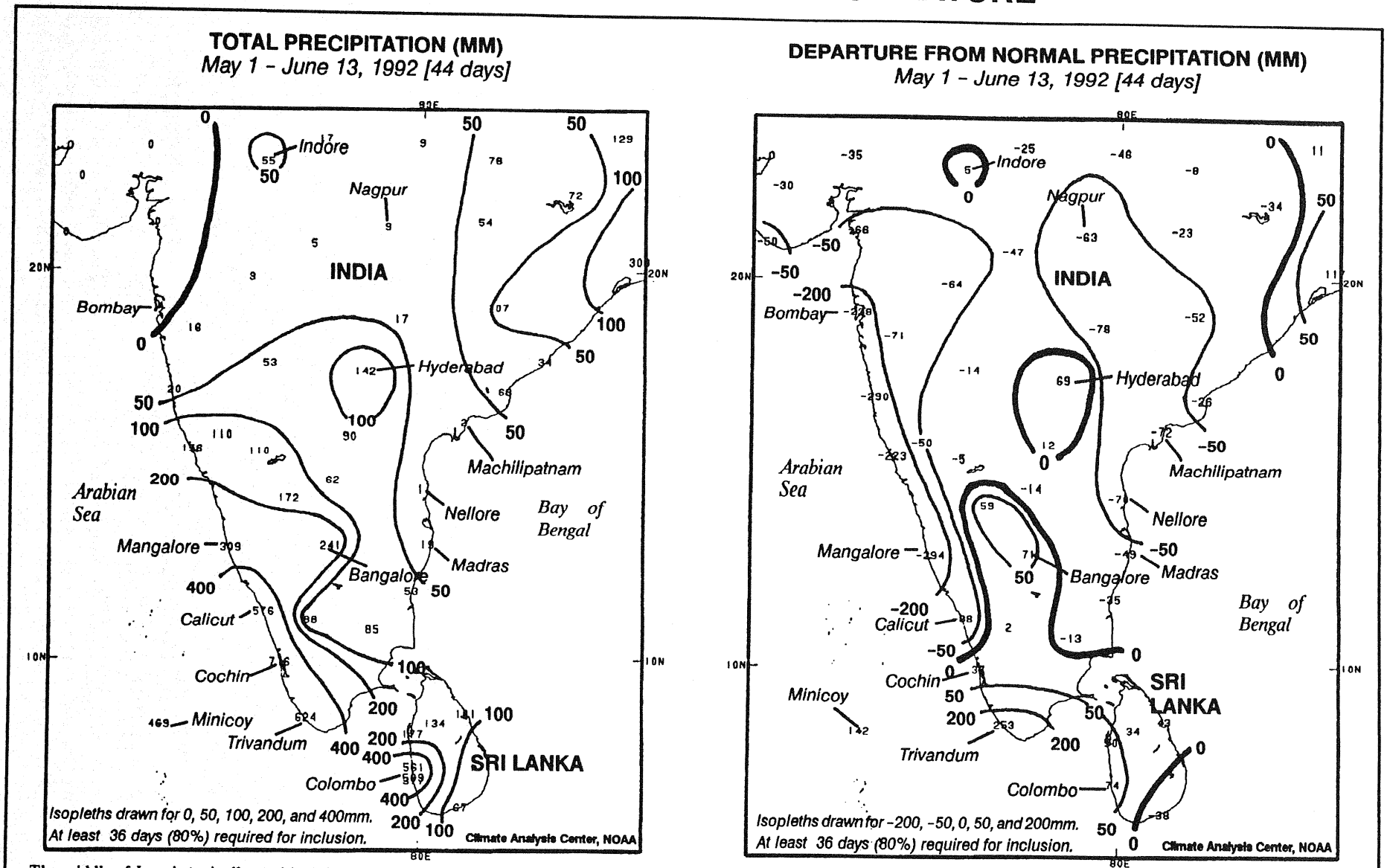

*Hot weather spread across the southern tier of the nation, the Midwest, the northern High Plains, and portions of the Canadian Praries, Intermountain West, and California Valleys as readings soared into the nineties (top). High humidities accompanied the heat along the south Atlantic and Gulf Coasts and through Texas, sending apparent temperatures above 95°F (bottom).*

## EXTREME APPARENT TEMPERATURE (°F)

*June 7 – 13, 1992*



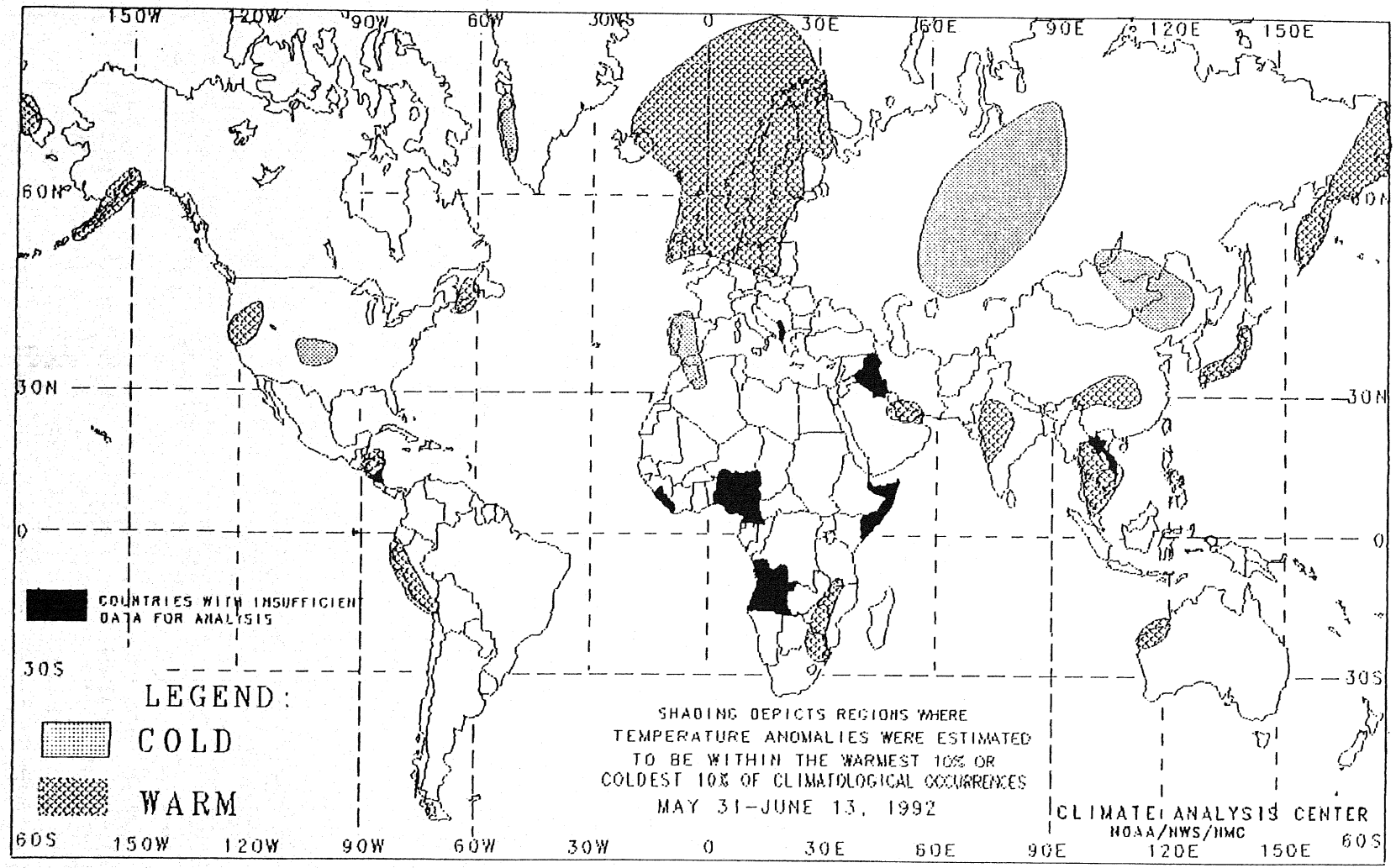
# GLOBAL CLIMATE HIGHLIGHTS FEATURE




The middle of June is typically a critical time for the southern Asian monsoon. The northward extend of the monsoon rains typically shifts northwestward from a Mangalore-to-Nellore line on June 5 to approximately Indore on June 15 (typically, the eastern edge of the monsoon is considerably farther north, extending south-to-north across western Bangladesh by June 5). As a consequence, daily precipitation normals at Bombay steadily increase from 8 mm on May 31 to 22 mm on June 15. This season's monsoon, to date, is somewhat behind schedule. Rainfall totals since May 1 are below normal at most locations, particularly along the western and east-central coasts of the subcontinent. Little or no measurable rain has fallen on much of these areas, which typically would have received anywhere from 30 mm west of Indore to over 600 mm at Mangalore. Farther south, however, inundating rainfall has soaked several locations during the last two weeks in extreme southern India and Sri Lanka, where very dry conditions had dominated earlier in the year. Daily totals of nearly 500 mm drenched Colombo during the first week of June, causing severe flooding, and 24-hour amounts of 120 mm to 150 mm drenched much of southern India from Trivandum to Calicut early last week.

# 2–WEEK GLOBAL TEMPERATURE ANOMALIES

*MAY 31 – JUNE 13, 1992*




The anomalies on this chart are based on approximately 2500 observing stations for which at least 13 days of temperature observations were received from synoptic reports. Many stations do not operate on a twenty–four hour basis so many night time observations are not taken. As a result of these missing observations the estimated minimum temperature may have a warm bias. This in turn may have resulted in an overestimation of the extent of some warm anomalies.

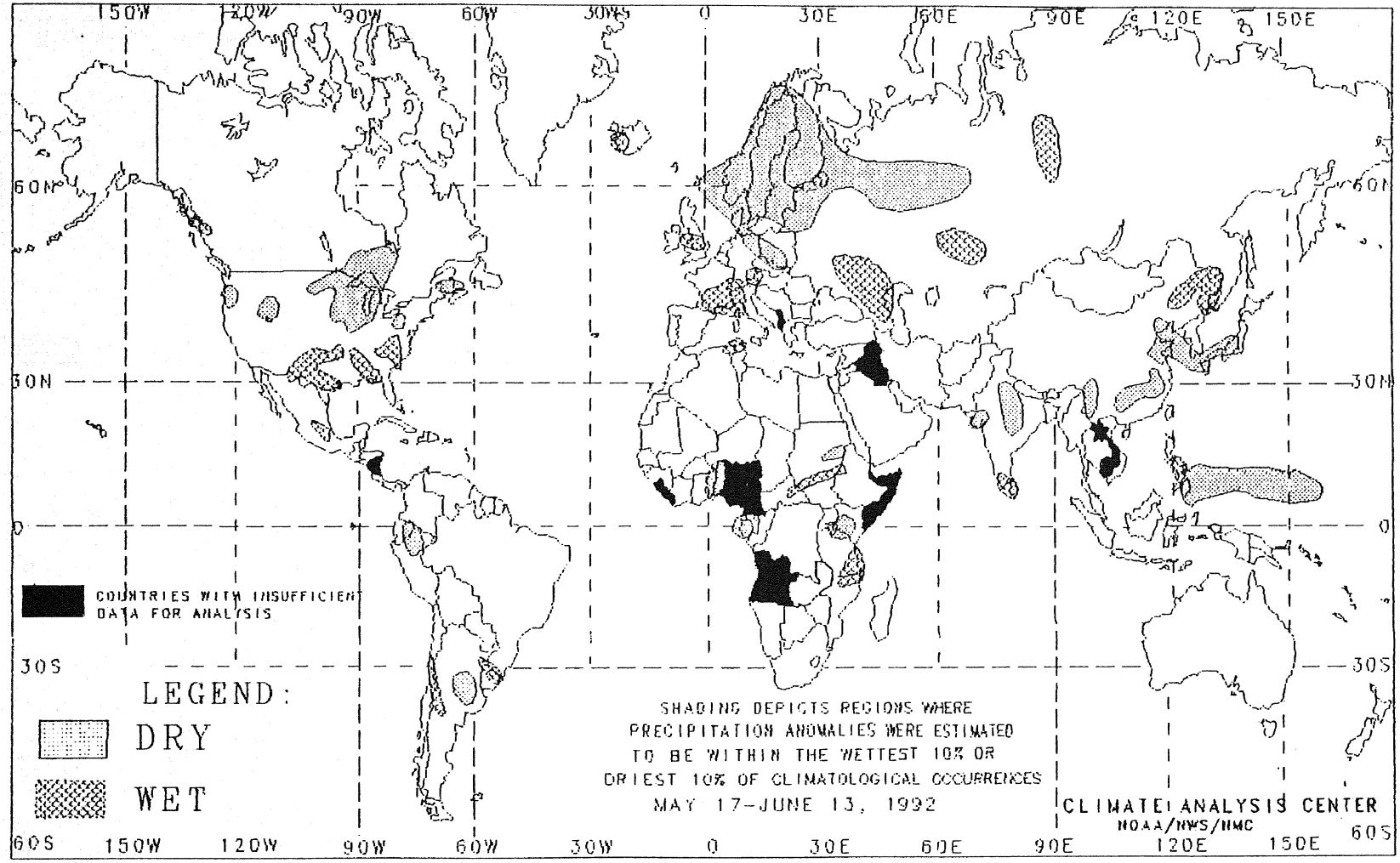
Temperature anomalies are not depicted unless the magnitude of temperature departures from normal exceeds 1.5°C.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

This chart shows general areas of two week temperature anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# 4–WEEK GLOBAL PRECIPITATION ANOMALIES

*MAY 17 – JUNE 13, 1992*




The anomalies on this chart are based on approximately 2500 observing stations for which at least 27 days of precipitation observations (including zero amounts) were received or estimated from synoptic reports. As a result of both missing observations and the use of estimates from synoptic reports (which are conservative), a dry bias in the total precipitation amount may exist for some stations used in this analysis. This in turn may have resulted in an overestimation of the extent of some dry anomalies.

In climatologically arid regions where normal precipitation for the four week period is less than 20 mm, dry anomalies are not depicted. Additionally, wet anomalies for such arid regions are not depicted unless the total four week precipitation exceeds 50 mm.

In some regions, insufficient data exist to determine the magnitude of anomalies. These regions are located in parts of tropical Africa, southwestern Asia, interior equatorial South America, and along the Arctic Coast. Either current data are too sparse or incomplete for analysis, or historical data are insufficient for determining percentiles, or both. No attempt has been made to estimate the magnitude of anomalies in such regions.

The chart shows general areas of four week precipitation anomalies. Caution must be used in relating it to local conditions, especially in mountainous regions.

# UNITED STATES SEASONAL CLIMATE SUMMARY

## *SPRING (MARCH – MAY) 1992*

Temperatures averaged well above normal across the western half of the nation during Spring 1992 as many states in the Far West experienced one of the ten warmest springs since 1895. In contrast, scattered areas of subnormal seasonal temperatures dotted the East Coast. Abnormally dry weather dominated Spring in the northern Rockies, Midwest, and Southeast while heavy rains drenched Texas, where excessive precipitation has been a chronic problem since December 1991.

At least ten locations from the Rockies westward reported record high March average temperatures, and hundreds of new daily record highs were established. Alaska was also unseasonably mild. Despite the widespread warmth, New England and upstate New York endured a very wintry March as a series of high–pressure centers dove southward out of Canada and steered cold Arctic air to the region. Although freezing temperatures penetrated as far south as Florida during March, the rapid return of warmer weather resulted in near normal temperatures across most of the Southeast. Above normal precipitation again plagued Texas. Frequent storms provided abundant rains for California and the desert Southwest, and heavy snows considerably increased the snowpack in the Sierra Nevada, adding to the region's available water supply for the upcoming typically dry time of the year. Much of the Alaskan Panhandle received very heavy precipitation of 12 to 38 inches in March as Pacific storms trekked well north of the usual track. In sharp contrast, less than half of normal precipitation fell in the Northwest. Both the Southeast and parts of the Northeast also received subnormal March precipitation.

During April, repeated surges of Arctic air invaded the central and eastern states. Below normal temperatures dominated the upper Great Lakes, upstate New York, and New England. Some sections of the middle Missouri Valley and southern Texas also experienced subnormal temperatures. In sharp contrast, abnormally warm weather again prevailed across the western half of the country. Severe weather frequently exploded along the boundary of the two contrasting air masses, especially through the southern Plains. Torrential downpours inundated the Gulf Coasts of Texas and western Louisiana, and heavier than normal precipitation also fell in the central Appalachians, parts of Florida and Georgia, much of central Oklahoma, and sections of the upper Midwest; however, subnormal precipitation was recorded across the central Mississippi and lower Ohio Valleys, through much of the Deep South, and along the Atlantic Coast from North Carolina to Maine. Hawaii and most of Alaska were also abnormally dry during April.

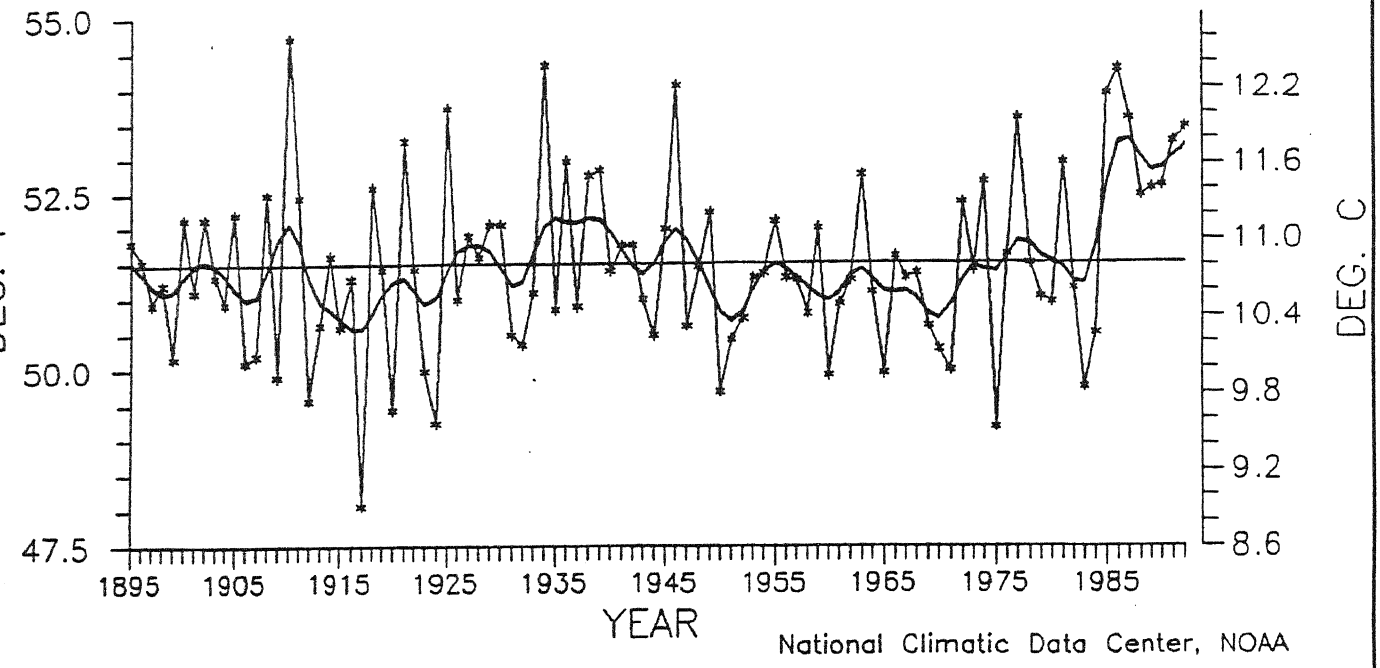
Heavy rains repeatedly soaked Oklahoma and Texas during May, and torrential downpours also drenched the Appalachians. Central and eastern Alaska and the island of Maui in the Hawaiian Islands also observed abundant precipitation. In contrast, below normal rainfall was reported through most of the Far West, the northern and central Plains, and the Southeast. May 1992 thus continued the pattern of abnormally dry weather that has dominated the Southeast, Midwest, and Northwest since the beginning of the year. Northwestern Alaska was also drier than normal. Abnormally warm weather again prevailed west of the Rockies and along the northern tier of states while below normal temperatures were widespread across the middle and southern Atlantic states and the southern half of the Plains. A freakish storm that spread heavy rains through much of the eastern seaboard early in the month generated huge amounts of snow (up to 60 inches) across the highest elevations of the Carolinas. Cold and wintry weather also plagued in central Alaska from Nome eastward to Fairbanks while unseasonably mild conditions were recorded across the northern and southern parts of the state. Hawaii and the Alaskan Panhandle experienced near normal temperatures.

Moderate to heavy rains continued across much of Texas during Spring 1992, with seasonal totals from 12 to 22 inches widespread (Table 1, Figures 1 and 2). Amounts exceeding ten inches were observed from the south–central states northeastward along the Appalachians to the lower Great Lakes and New England. In addition, above normal totals of 3 to 14 inches also soaked southern California and the desert Southwest. According to the National Climatic Data Center (NCDC), Spring 1992 ranked among the top ten wettest springs of the last 98 years in New Mexico, Arizona, and Texas (Page 16). Regionally, the Southwest reported the sixth wettest spring among all such seasons since 1895 (Page 11).

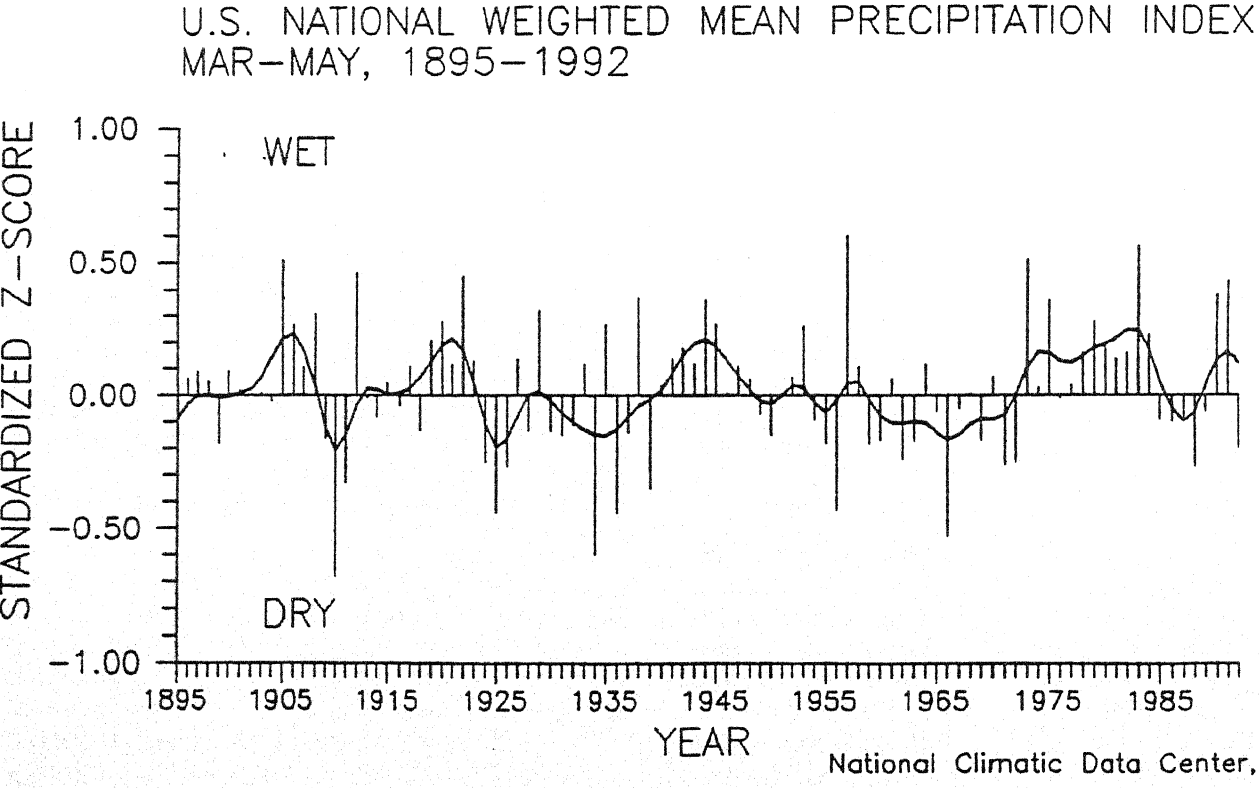
In sharp contrast, five states (WA, OR, ID, MO, and ME) endured one of the eight driest spring seasons in 98 years of record, according to NCDC (Page 16). Regionally, the Northwest reported the 4$^{th}$ driest spring since records began (Page 11). Less than two inches of rain were reported on the island of Oahu in Hawaii while seasonal totals under six inches were common in northern Rockies and northern Plains (Table 2, Figures 1 and 2). Nationally, Spring 1992 ranked the 16$^{th}$ driest on record (Page 11), and the second driest Spring since 1973 (Page 10).

Abnormally warm weather prevailed across the western third of the country as temperatures averaged 6°F to 9°F above seasonal normals (Table 3, Figures 3 and 4). According to NCDC, Wyoming had the warmest spring on record, and ten other states ranked among the ten warmest springs since 1895, based on the historical distribution of average spring temperatures (Page 16). Regionally, the Northwest and West recorded the second warmest spring, and the fifth warmest was observed in both the West North Central and Southwest Regions (Page 11). The nation as a whole experienced the ninth warmest Spring of the last 98 years (page 11), and the eighth consecutive such season with above median temperatures (Page 10).

In sharp contrast, persistently cool conditions, with temperatures averaging 2°F to 4°F below normal, prevailed along parts of the East Coast (Table 4, Figures 3 and 4). Based on records at NCDC, the Northeast and Southeast Regions experienced a spring among the coolest third of the historical distribution, with ranks of 25$^{th}$ and 10$^{th}$, respectively, out of the 98 springs since 1895 (Page 11) . Georgia reported the eighth coldest spring on record while South Carolina and Delaware endured the tenth coldest (Page 16).




ationally Averaged Spring Temperatures (March–May) 1895–1992, as computed by the National Climatic Data enter. *The Spring of 1992 was the eighth consecutive spring with warmer than normal conditions nationally.*



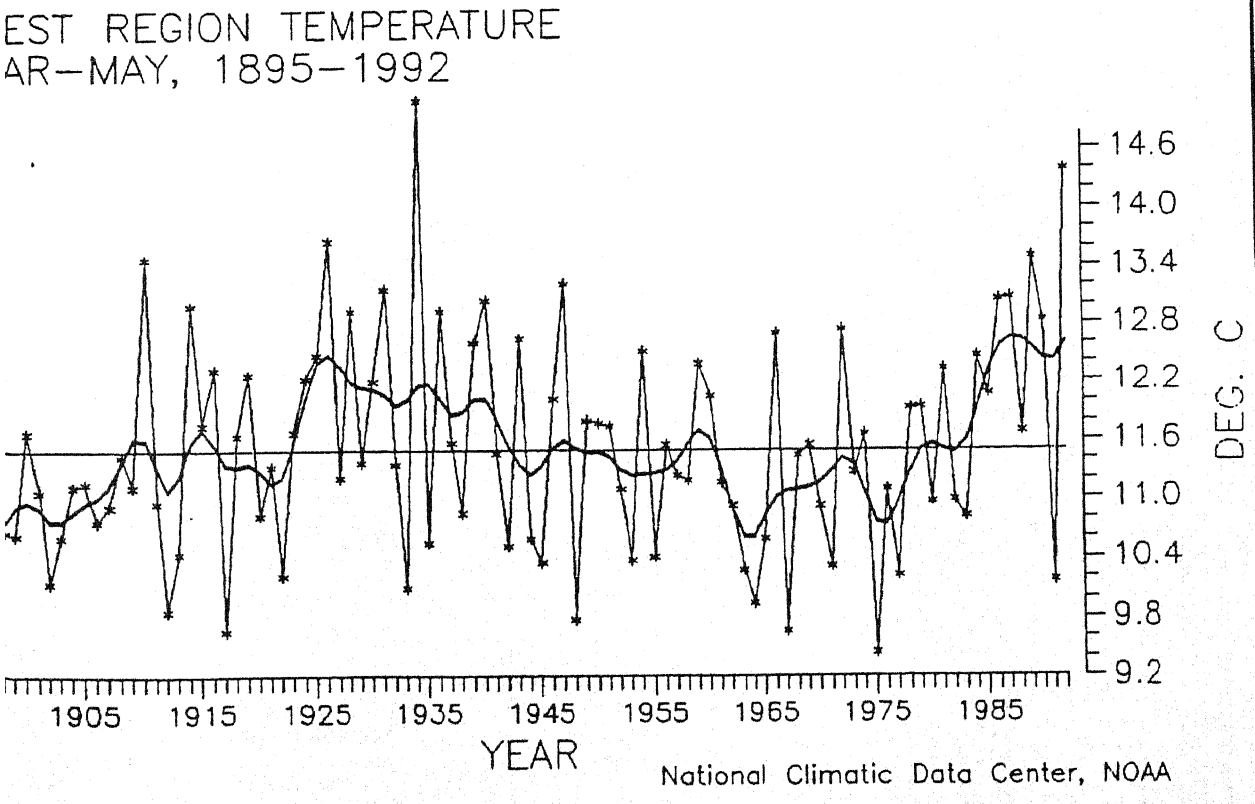

ational Mean Spring Precipitation Index (March–May) 1895–1992, as computed by the National Climatic Data enter. *The Spring precipitation index for 1992 was slightly below the median following two consecutive springs with wetter an normal weather nationally.*

**TEMPERATURE AND PRECIPITATION RANKINGS FOR MARCH–MAY 1992, BASED ON THE PERIOD 1895–1992. 1 = DRIEST/COLDEST AND 98 = WETTEST/HOTTEST.**

| REGION | PRECIPITATION | TEMPERATURE |
|---|---|---|
| NORTHEAST | 33 | 25 |
| EAST NORTH CENTRAL | 31 | 57 |
| CENTRAL | 14 | 46 |
| SOUTHEAST | 24 | *10* |
| WEST NORTH CENTRAL | 14 | **95** |
| SOUTH | 65 | 60 |
| SOUTHWEST | **94** | **95** |
| NORTHWEST | *4* | **97** |
| WEST | 41 | **97** |
| NATIONAL | 16 | **90** |

Top 10 rankings: **BOLD**
Bottom 10 rankings: *Italic*

*National Climatic Data Center*

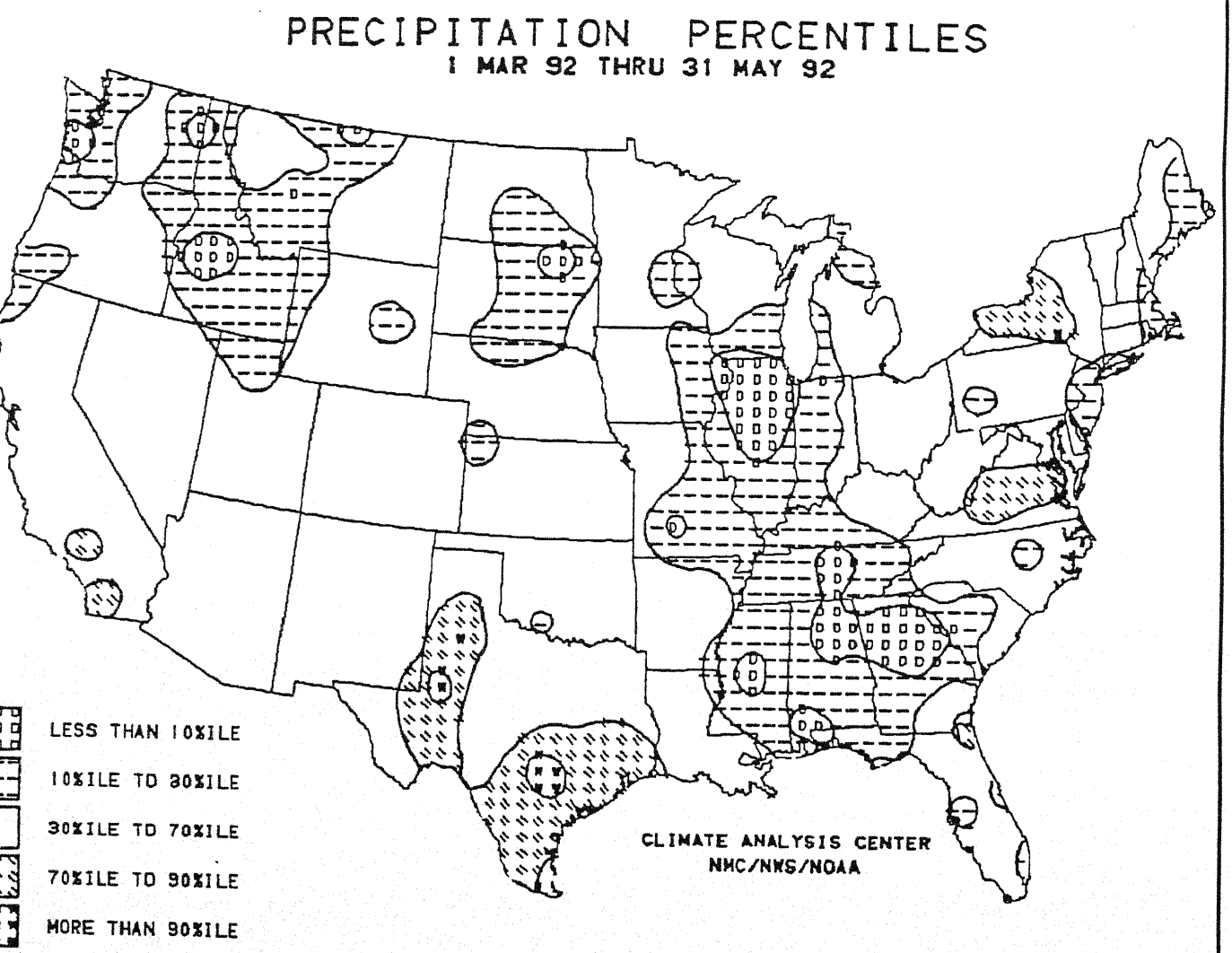



es averaged across the West Region (CA and NV) 1895–1992, as computed by the National ta Center. *Only the exceedingly warm Spring of 1934 was warmer than this past Spring (March–May). s averaged 0.7°C milder during Spring 1992 than during the third mildest March–May period on record, bserved in 1926.*

**TABLE 1. *SELECTED STATIONS WITH 150% OR MORE OF THE NORMAL PRECIPITATION AND 13.00 INCHES OR MORE PRECIPITATION; OR, STATIONS WITH 13.00 INCHES OR MORE PRECIPITATION AND NO NORMALS DURING SPRING 1992.***

| STATION | TOTAL (INCHES) | PCT. OF NORMAL | STATION | TOTAL (INCHES) | PCT. OF NORMAL |
|---|---|---|---|---|---|
| YAKUTAT, AK | 55.67 | 204.1 | CORPUS CHRISTI NAS, TX | 16.62 | *** |
| KINGSVILLE NAS, TX | 21.29 | 361.5 | AUSTIN, TX | 16.38 | 183.4 |
| VICTORIA, TX | 21.25 | 252.4 | MYRTLE BEACH AFB, SC | 16.37 | *** |
| JUNEAU, AK | 18.91 | 197.0 | CORPUS CHRISTI, TX | 15.23 | 253.4 |
| BEEVILLE NAS, TX | 17.36 | 221.2 | KILLEEN/ROBERT–GRAY AAF, TX | 15.05 | *** |
| MCCOMB, MS | 17.30 | *** | ORLANDO, FL | 13.94 | 150.5 |
| SAN ANTONIO, TX | 17.30 | 225.3 | SAN ANTONIO/KELLY AFB, TX | 13.63 | *** |
| HOUSTON, TX | 17.10 | 153.1 | ALICE, TX | 13.58 | 253.3 |
| SAN ANTONIO/RANDOLPH AFB, TX | 17.00 | *** | HOUSTON/ELLINGTON AFB, TX | 13.16 | *** |
| PALACIOS, TX | 16.78 | 184.6 | GALVESTON, TX | 12.18 | 150.7 |

*NOTE: Stations without precipitation normals are indicated by asterisks.*




**IGURE 1.** Spring (March – May) 1992 Precipitation Percentiles. *Exceptionally low precipitation totals ere measured across much of the Southeast, Midwest, northern Great Plains, and Northwest, with some loca- ons among the driest 10% of the 1951 – 1980 distribution. In the southern Plains, however, another wet season as observed, continuing the wet trend that began in late 1991.*

**TABLE 2.** ***SELECTED STATIONS WITH 50% OR LESS OF THE NORMAL PRECIPITATION AND NORMAL PRECIPITATION OF 6.00 INCHES OR MORE DURING SPRING 1992.***

| STATION | TOTAL (INCHES) | PCT. OF NORMAL | NORMAL (INCHES) |
|---|---|---|---|
| TRAVERSE CITY, MI | 1.04 | 15.4 | 6.77 |
| SIDNEY, NE | 1.70 | 26.9 | 6.33 |
| HONOLULU, OAHU, HI | 1.95 | 31.9 | 6.12 |
| COLD BAY, AK | 2.04 | 30.4 | 6.70 |
| WATERTOWN, SD | 2.58 | 39.4 | 6.55 |
| SEXTON SUMMIT, OR | 2.83 | 35.3 | 8.02 |
| APALACHICOLA, FL | 3.11 | 30.4 | 10.23 |
| TAMPA, FL | 3.22 | 37.4 | 8.60 |
| EASTPORT, ME | 3.35 | 33.6 | 9.96 |
| JACKSON, MI | 3.36 | 42.1 | 7.98 |
| HOMESTEAD AFB, FL | 3.57 | 29.4 | 12.13 |
| HOULTON, ME | 3.82 | 45.9 | 8.33 |
| MOLINE, IL | 4.25 | 39.0 | 10.89 |
| JACKSON, MS | 4.82 | 29.9 | 16.13 |
| PEORIA, IL | 5.02 | 47.7 | 10.53 |
| ZANESVILLE, OH | 5.22 | 48.9 | 10.67 |
| BLYTHEVILLE AFB, AR | 5.33 | 39.7 | 13.43 |
| MIAMI, FL | 5.65 | 48.7 | 11.61 |
| VALPARAISO/EGLIN AFB, FL | 5.66 | 38.2 | 14.82 |
| TUSCALOOSA, AL | 6.25 | 38.7 | 16.13 |

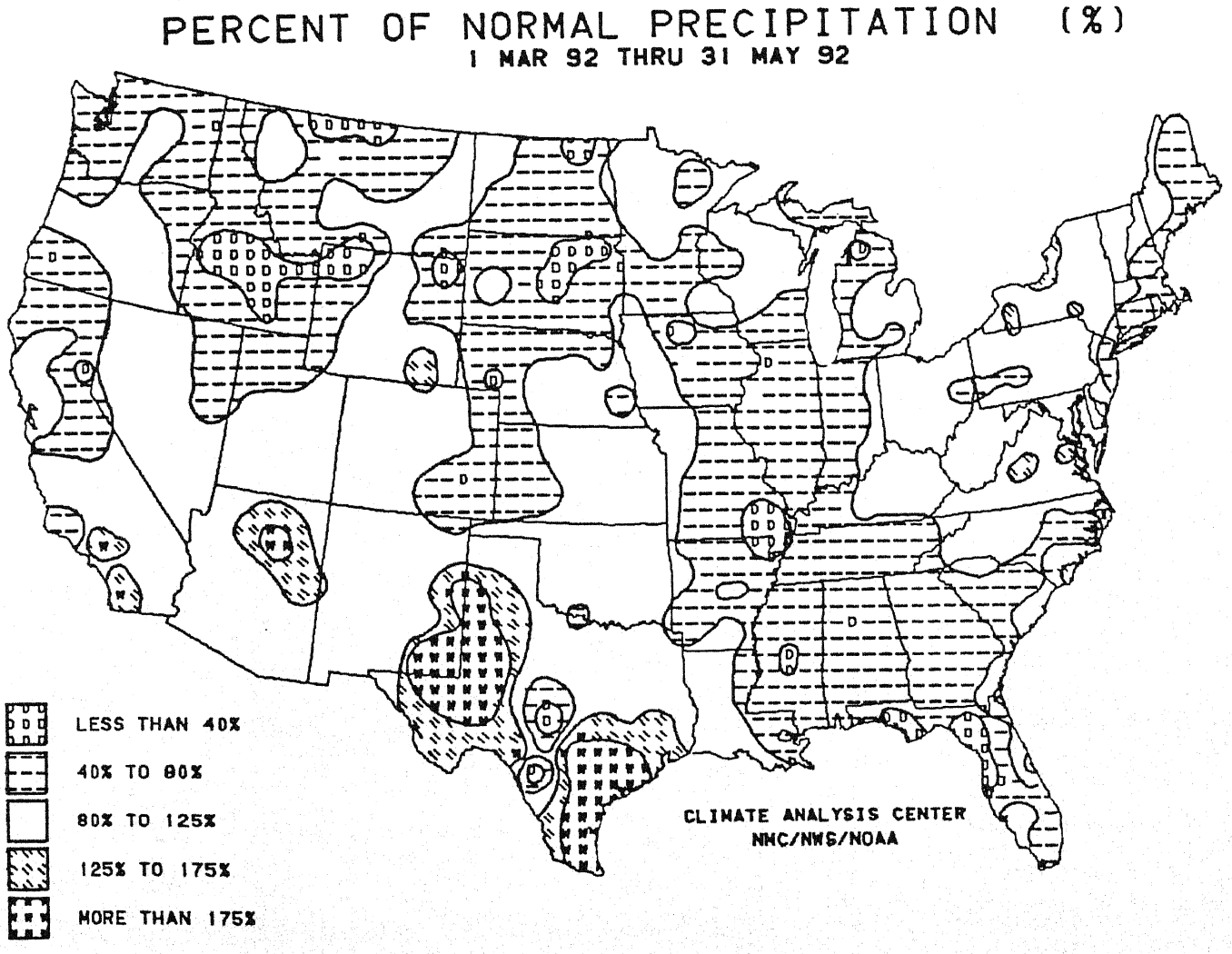



**FIGURE 2.** Percent of Normal Precipitation for Spring (March – May) 1992. *Subnormal precipitation totals were widespread across the Southeast, Midwest, northern and central Plains, and Northwest, with parts of southern Idaho, northern South Dakota, and the middle Mississippi Valley receiving under 40% of normal. In contrast, very heavy precipitation soaked parts of the desert Southwest and southern Plains, particularly in much of Texas, where excessive precipitation has been a chronic problem since late 1991.*

**TABLE 3.** ***SPRING 1992 AVERAGE TEMPERATURE 6.5°F OR MORE ABOVE NORMAL.***

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|---|---|---|---|---|---|
| RENO, NV | +8.7 | 55.9 | MEDFORD, OR | +7.2 | 58.3 |
| BURLEY, ID | +8.5 | 54.5 | HELENA, MT | +7.2 | 49.3 |
| MERCED/CASTLE AFB, CA | +8.1 | 68.2 | BOZEMAN, MT | +7.2 | 47.1 |
| SALT LAKE CITY, UT | +7.9 | 57.3 | LOVELOCK, NV | +7.1 | 56.2 |
| IDAHO FALLS, ID | +7.9 | 50.7 | POCATELLO, ID | +7.1 | 51.9 |
| STAMPEDE PASS, WA | +7.9 | 43.8 | BOISE, ID | +6.9 | 56.0 |
| SEXTON SUMMIT, OR | +7.7 | 50.6 | WINNEMUCCA, NV | +6.8 | 53.1 |
| LANDER, WY | +7.6 | 49.9 | ROCK SPRINGS, WY | +6.6 | 46.5 |
| BLUE CANYON, CA | +7.4 | 51.7 | TONOPAH, NV | +6.5 | 54.9 |
| BUTTE, MT | +7.3 | 44.2 | SHERIDAN, WY | +6.5 | 49.0 |

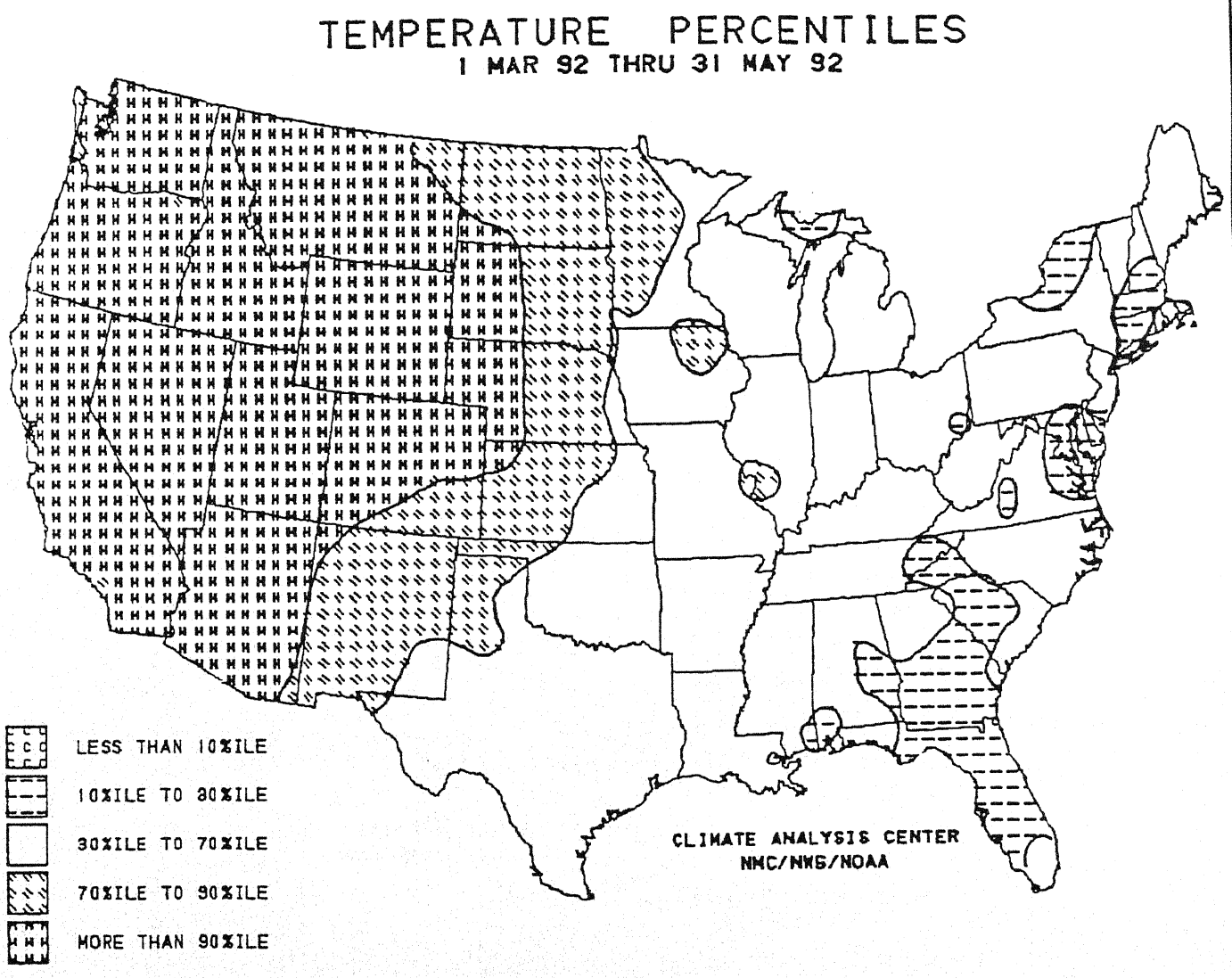



**FIGURE 3.** Spring (March–May) 1992 Temperature Percentiles. *Very warm conditions covered the western half of the country, with most locations from the Rockies westward recording seasonal temperatures among the highest 10% of the 1951–1980 distribution. In contrast, significantly cooler than normal conditions (<30%ile) were observed in parts of the East.*

**TABLE 4. *SPRING 1992 AVERAGE TEMPERATURE 2.5°F OR MORE BELOW NORMAL***

| STATION | DEPARTURE (°F) | AVERAGE (°F) | STATION | DEPARTURE (°F) | AVERAGE (°F) |
|---|---|---|---|---|---|
| KOTZEBUE, AK | –5.3 | 9.5 | JACKSONVILLE, FL | –2.9 | 65.9 |
| UNALAKLEET, AK | –4.0 | 18.8 | ANIAK, AK | –2.8 | 24.3 |
| GAINESVILLE, FL | –4.0 | 65.7 | FAYETTEVILLE, NC | –2.7 | 58.9 |
| WRIGHTSTOWN/MCGUIRE AFB, NJ | –3.3 | 49.0 | MACON/WARNER–ROBINS AFB, GA | –2.7 | 62.8 |
| WAYCROSS, GA | –3.2 | 64.5 | ALBANY, GA | –2.6 | 64.8 |
| ST PETERBURG–CLEARWATER, FL | –3.2 | 70.1 | BETTLES, AK | –2.5 | 20.8 |
| DOVER AFB, DE | –3.1 | 50.5 | BOSTON/LOGAN, MA | –2.5 | 45.8 |
| POUGHKEEPSIE, NY | –2.9 | 44.6 | MILLVILLE, NJ | –2.5 | 49.5 |
| BRUNSWICK, GA | –2.9 | 64.0 | HAMPTON/LANGLEY AFB, VA | –2.5 | 55.0 |

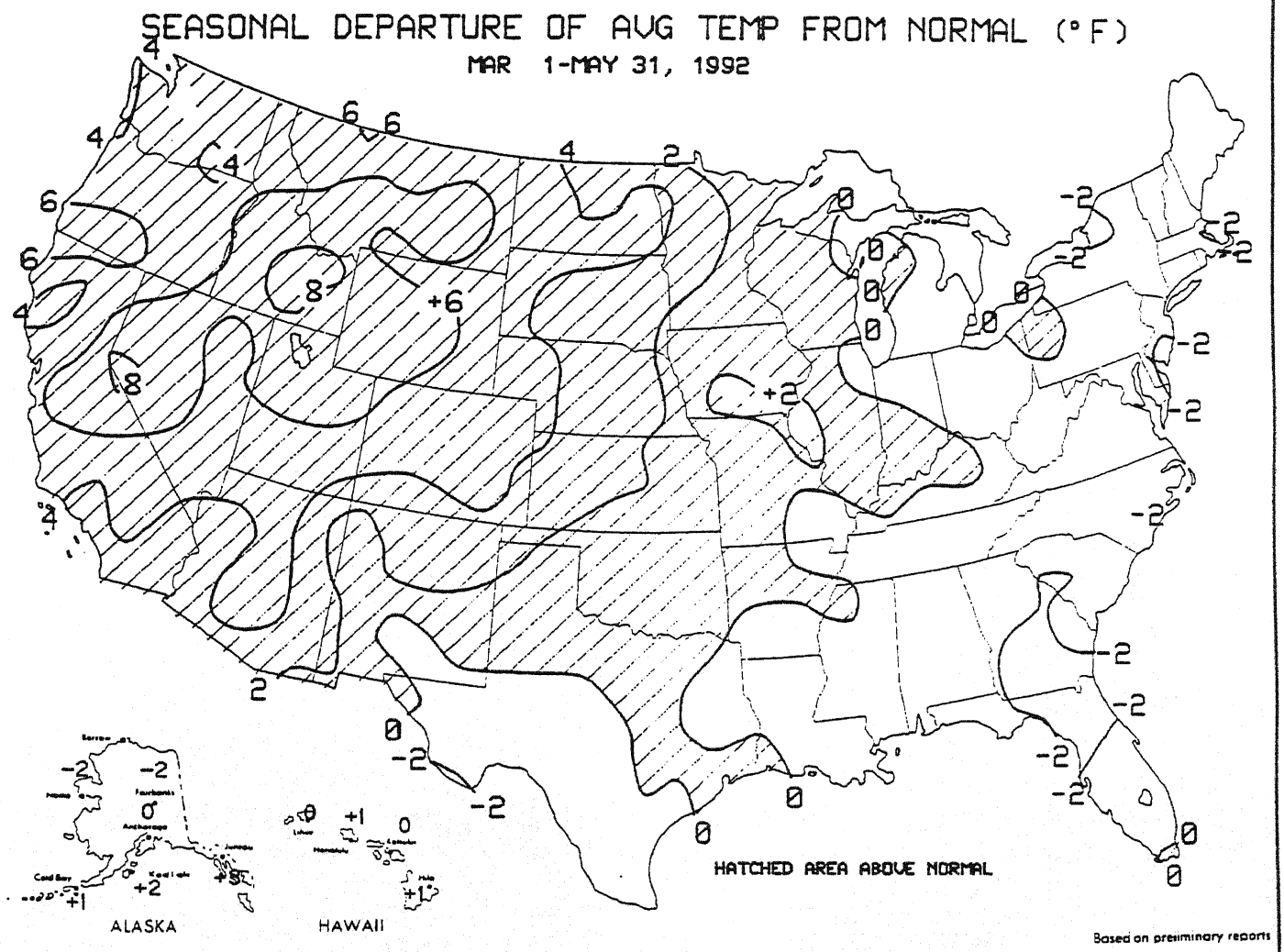
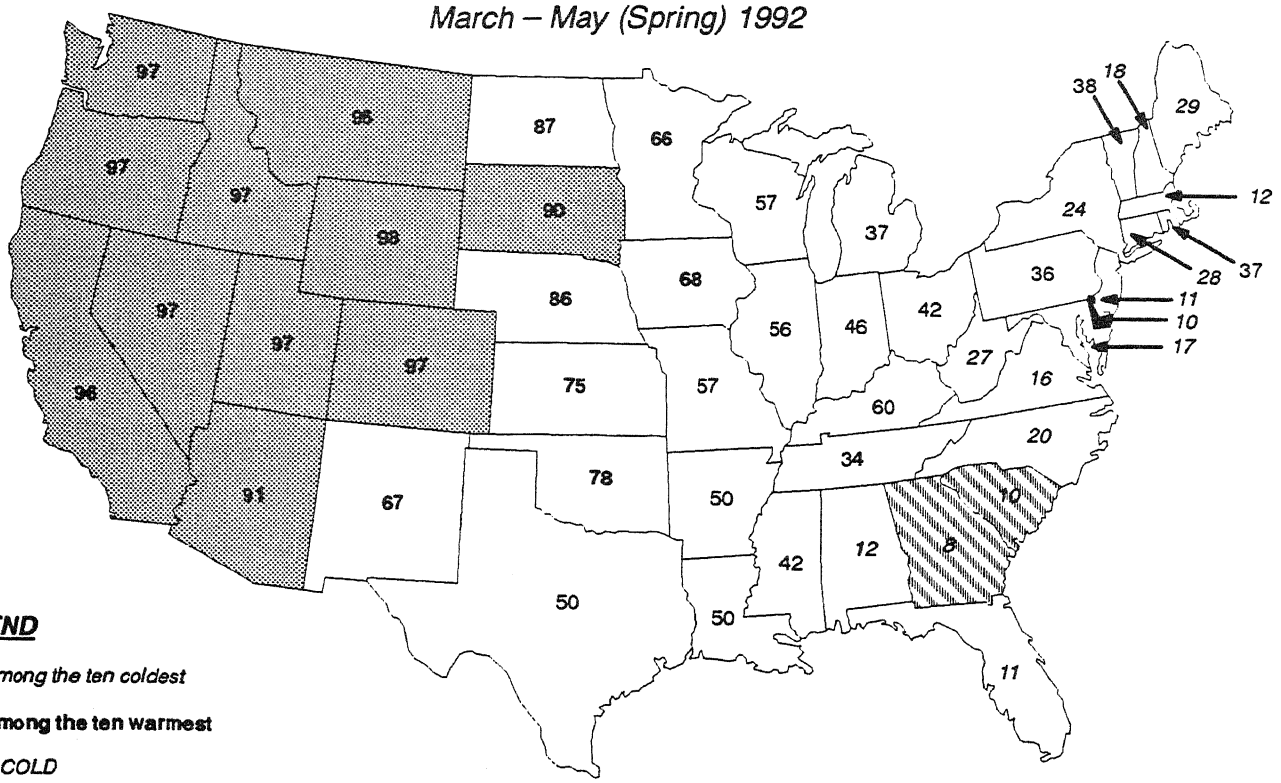



**FIGURE 4.** Spring (March – May) 1992 Departure of Average Temperature from Normal. Isopleths drawn for –2°F, 0°F, 2°F, 4°F, 6°F, and 8°F. *Spring was milder than normal throughout central and western portions of the country, with seasonal departures exceeding +8°F in parts of the Great Basin and Intermountain West. In sharp contrast, somewhat cooler than normal weather dominated the eastern seaboard and the southern Big Bend of Texas, where some locations averaged as much as 3°F below normal.*

# HISTORICAL TEMPERATURE RANKINGS BY STATE

*March – May (Spring) 1992*




**LEGEND**

- *Among the ten coldest*
- **Among the ten warmest**

*1 – 33: COLD*

34 – 65: NEAR NORMAL

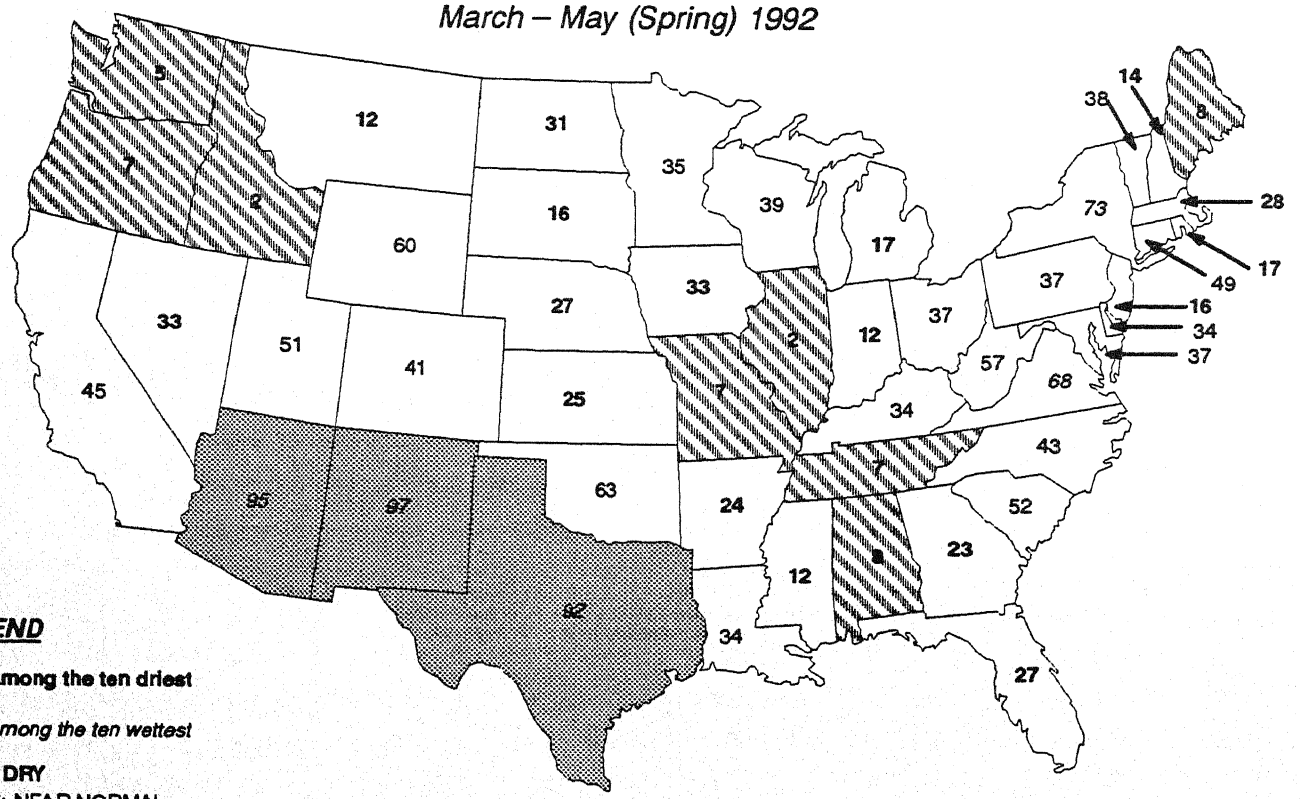
**66 – 98: WARM**

*Based on preliminary data generated by the National Climatic Data Center*

***This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.***

# HISTORICAL PRECIPITATION RANKINGS BY STATE

*March – May (Spring) 1992*




**LEGEND**

- **Among the ten driest**
- *Among the ten wettest*

**1 – 33: DRY**

34 – 65: NEAR NORMAL

*66 – 98: WET*

*Based on preliminary data generated by the National Climatic Data Center*

***This chart depicts the ranking of the specific parameter, as measured during the period indicated, with respect to all other such periods on record since 1895.***

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC ADVISORY 92/06

*issued by*

## DIAGNOSTICS BRANCH
## CLIMATE ANALYSIS CENTER, NMC

*JUNE 10, 1992*

Most of the tropical Pacific indices and anomaly patterns for May show features typical of the mature phase of a warm (ENSO) episode. However, the subsurface thermal structure and recent trends in weekly sea surface temperature anomaly patterns indicate that the current warm episode is in its final stages. During recent weeks, the thermocline has begun to shoal in the eastern equatorial Pacific (Fig. 1) resulting in a rapid decrease in the positive subsurface temperature anomalies between 50 and 100 m that have characterized the eastern equatorial Pacific since late 1991. By the end of May, only a thin layer of warmer than normal water remained in the central and eastern equatorial Pacific (Fig. 2). A similar shoaling of the thermocline occurred during the latter stages of the 1986–1987 warm episode. However, the shoaling this year appears to be more rapid.

Recent weekly SST analysis indicate that significant cooling has begun throughout the equatorial central and eastern Pacific (Fig. 3). An inspection of the pentad (5–day) mean 850 mb winds indicates that during the latter part of May the equatorial easterlies increased in strength over many sections of the Pacific Basin. A continuation of this trend would lead to further decreases in the SST anomalies and a gradual return to a near–normal pattern of tropical convection. However, for the month of May convection was stronger than normal over the central and eastern equatorial Pacific and weaker than normal over the southern Philippines, northern Indonesia, Southeast Asia, and over northeastern South America and the equatorial Atlantic (Fig. 4). This pattern is typical of the mature phase of a warm (ENSO) episode.

The experimental predictions provided by the Cane and Zebiak model and the CCA indicate that positive SST anomalies will continue during the next two seasons. The Cane and Zebiak model indicates that the SST anomalies will decrease and that near normal conditions will be present by early in 1993. The rapid shoaling of the oceanic thermocline in recent weeks suggests that a more rapid decrease in the sea surface temperature (SST) anomalies is possible if the surface easterlies strengthen. This would result in increased upwelling and a rapid cooling of the ocean surface as the cold subsurface water is tapped.

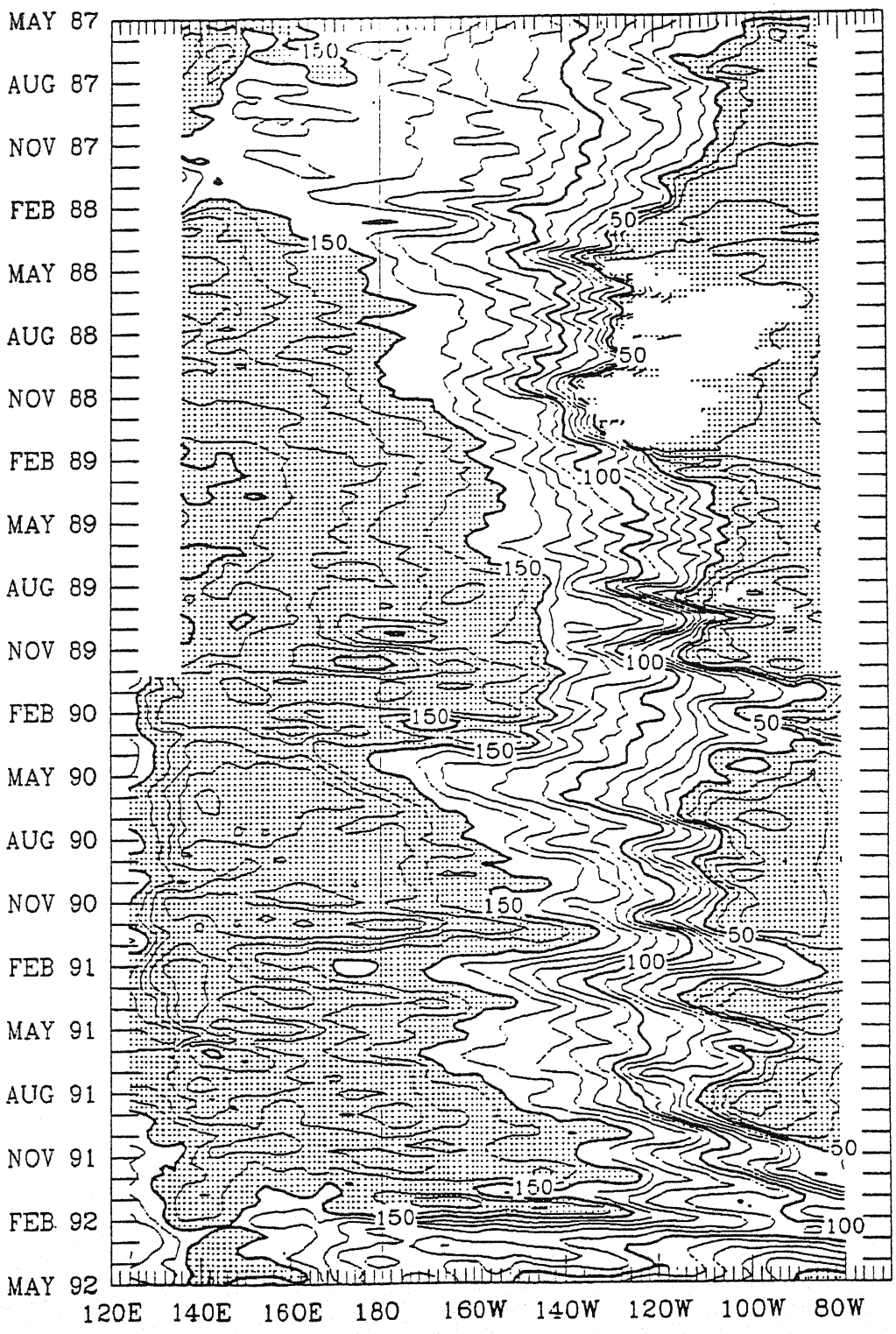



**FIGURE 1.** Anomalous depth of the 20°C isotherm along the equator in the Pacific Ocean. Data are derived from an analysis system which assimilates oceanic observations into an oceanic GCM. The contour interval is 10 m with dark (light) shading for values greater (less) than 10 m (–10 m). Anomalies are computed with respect to the 1985 – 1990 base period.

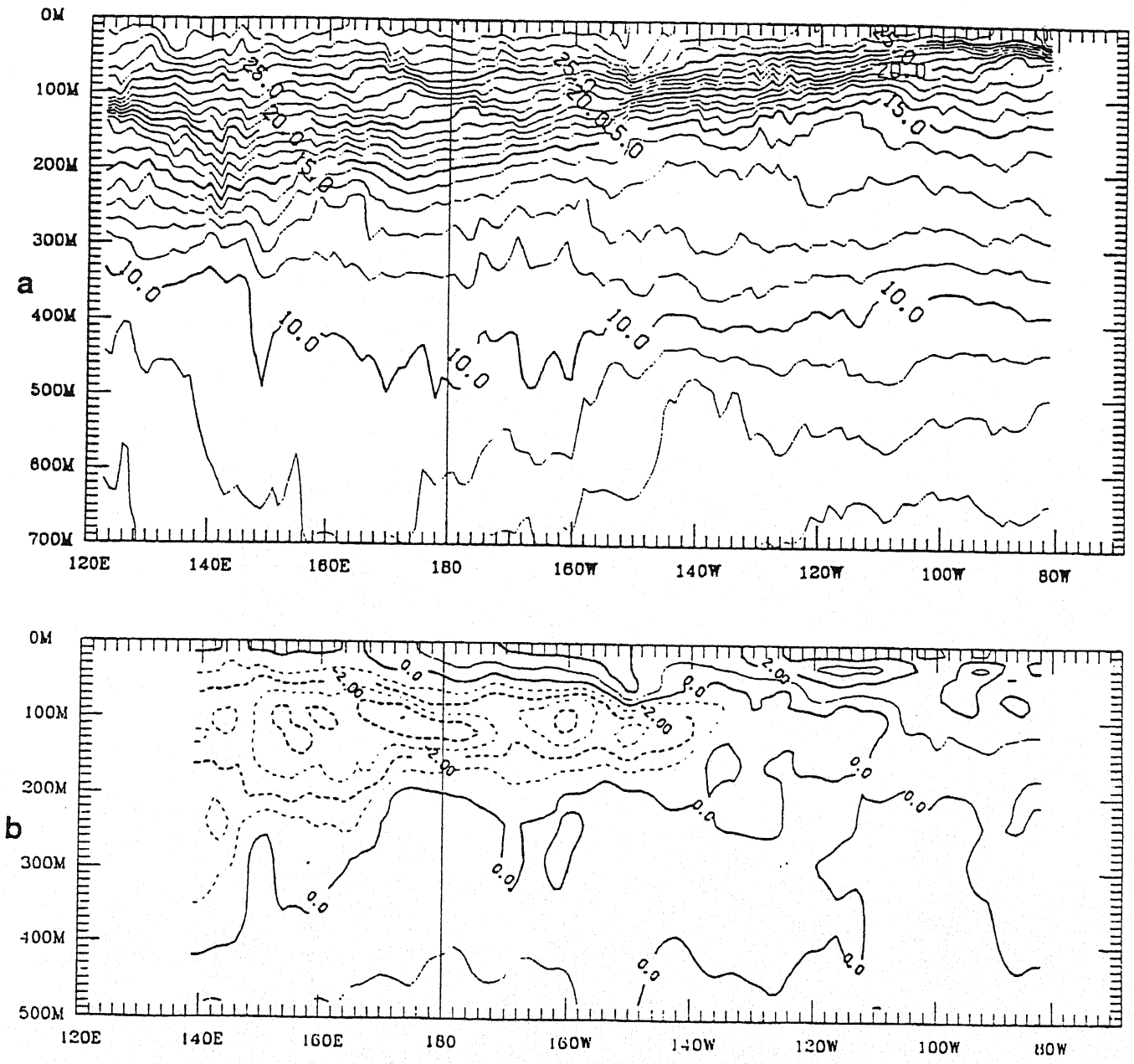



**FIGURE 2.** Equatorial depth–longitude section of ocean temperature (a) and ocean temperature anomalies (b) for the week centered on May 20, 1992. Data are derived from an analysis system which assimilates oceanic observations into an oceanic GCM. Contour interval is 1°C. Negative anomalies are indicated by dashed contours in (b). Anomalies are computed as departures from the 1985 –1990 base period means.

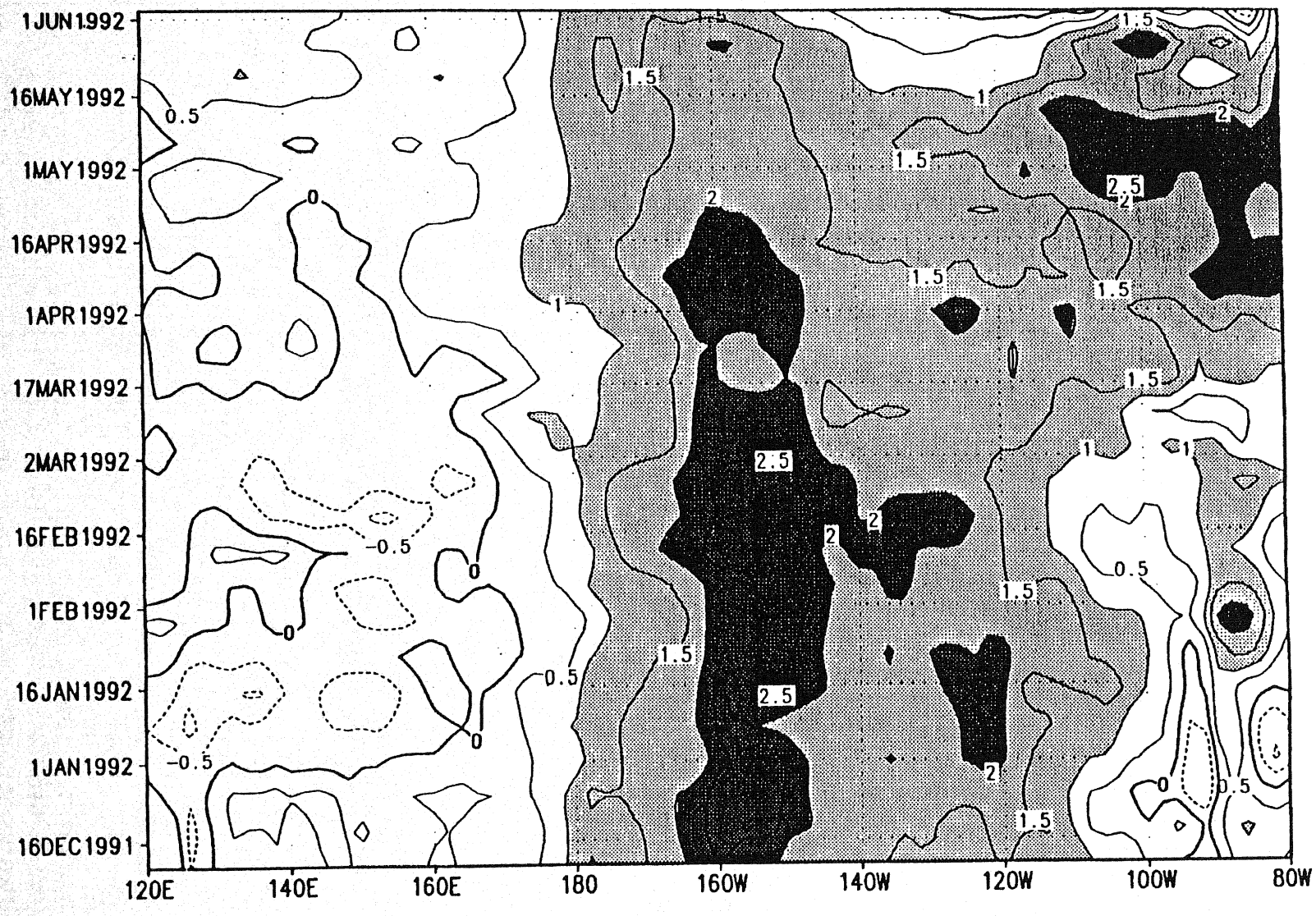



**FIGURE 3.** Time – longitude section of equatorial sea surface temperature anomalies in the Pacific Ocean. Contour interval is 0.5°C. Negative anomalies are indicated by dashed contours. Light (dark) shading indicates anomalies between (greater than) 1°C and 2°C ( 2°C ).

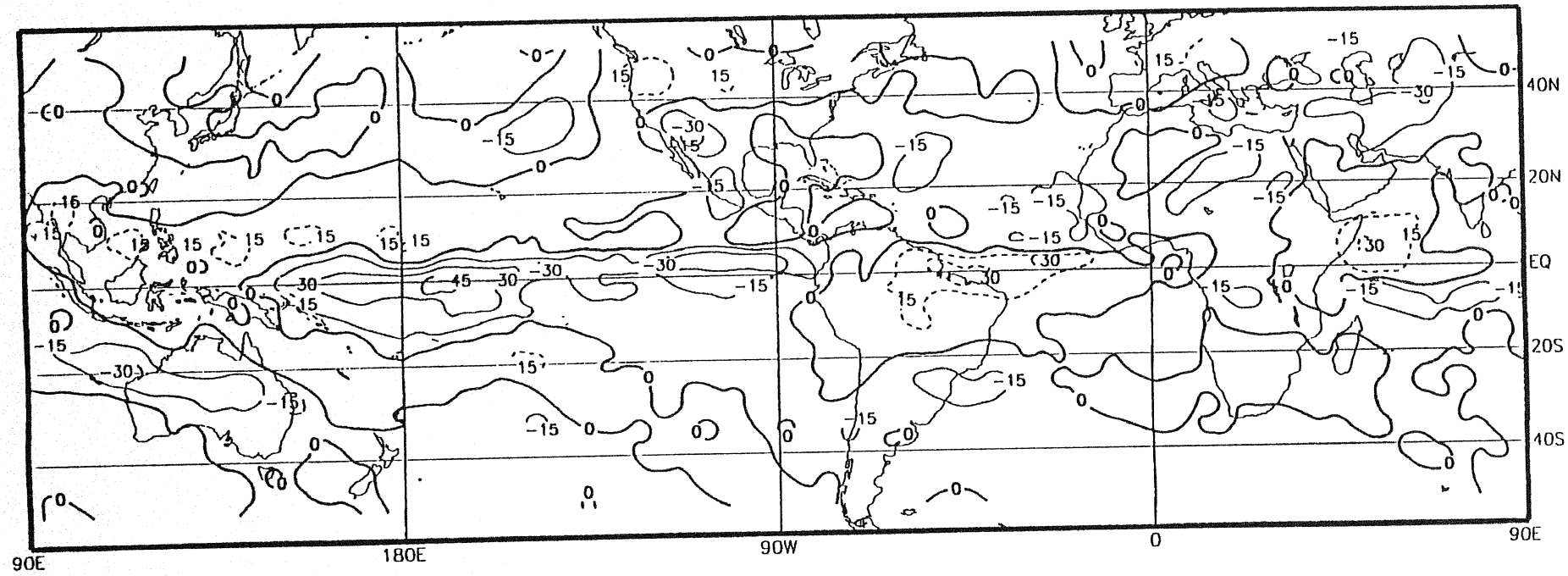



**FIGURE 4.** Anomalous outgoing longwave radiation (OLR) for March 1992. Anomalies are computed as departures from the 1979–1988 base period means. Contour interval is 15 $Wm^{-2}$. Positive anomalies are dashed.

# ATMOSPHERIC AND SEA SURFACE TEMPERATURE INDEX VALUES

| DATE | SLP ANOMALIES | | TAHITI-DARWIN SOI | PACIFIC 850 MB ZONAL WIND INDICES | | | PACIFIC 200 MB ZONAL WIND INDEX | OLR INDEX | PACIFIC SST | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TAHITI | DARWIN | | 5N-5S 135E-180 | 5N-5S 175W-140W | 5N-5S 135W-120W | 5N-5S 165W-110W | 5N-5S 160E-160W | NINO 1+2 0-10S 90W-80W | | NINO 3 5N-5S 150W-90W | | NINO 4 5N-5S 160E-150W | |
| MAY 92 | 0.3 | 0.2 | 0.0 | -0.4 | -1.1 | -1.1 | -0.8 | -2.1 | 2.3 | 26.4 | 1.6 | 28.4 | 0.8 | 29.3 |
| APR 92 | -0.7 | 1.6 | -1.4 | -0.7 | -1.3 | -0.5 | -1.1 | -2.0 | 1.8 | 27.3 | 1.4 | 28.6 | 0.9 | 29.2 |
| MAR92 | -1.6 | 3.1 | -3.0 | -0.5 | -2.1 | -1.5 | -1.3 | -2.1 | 1.2 | 27.3 | 1.3 | 28.2 | 1.0 | 29.1 |
| FEB 92 | -0.9 | 1.3 | -1.4 | -0.4 | -1.7 | -1.3 | -2.2 | -1.4 | 0.8 | 26.5 | 1.4 | 27.6 | 0.9 | 28.9 |
| JAN 92 | -1.6 | 3.9 | -3.4 | -1.5 | -2.5 | -2.3 | -0.2 | -2.3 | 0.5 | 24.8 | 1.5 | 27.0 | 0.7 | 28.8 |
| DEC 91 | -2.3 | 1.2 | -2.3 | -0.7 | -2.2 | -1.5 | -1.2 | -1.8 | 0.7 | 23.3 | 1.2 | 26.3 | 1.2 | 29.4 |
| NOV 91 | 0.0 | 1.4 | -0.8 | -1.7 | -1.4 | -1.2 | -0.2 | -2.4 | 0.4 | 21.9 | 1.1 | 26.0 | 1.1 | 29.4 |
| OCT 91 | -1.8 | 0.5 | -1.5 | -0.1 | -0.8 | -1.2 | -0.6 | -0.3 | 0.4 | 21.1 | 0.8 | 25.7 | 1.2 | 29.6 |
| SEP 91 | -1.4 | 1.4 | -1.8 | -1.1 | -1.1 | -1.3 | -0.4 | -0.6 | 0.3 | 20.9 | 0.6 | 25.4 | 0.8 | 29.1 |
| AUG 91 | 0.0 | 1.4 | -0.9 | -0.3 | -0.2 | 0.2 | 0.7 | -1.0 | 0.3 | 21.3 | 0.5 | 25.5 | 0.9 | 29.2 |
| JUL 91 | 0.3 | 0.6 | -0.2 | -0.2 | -0.5 | -0.6 | 0.1 | -0.2 | 0.9 | 22.6 | 1.0 | 26.6 | 0.9 | 29.4 |
| JUN 91 | 0.1 | 1.0 | -0.5 | -0.3 | -0.8 | -1.1 | -0.6 | -0.1 | 0.4 | 23.2 | 1.3 | 27.6 | 0.8 | 29.3 |

* PRELIMINARY

** REVISED

TABLE T1 – Atmospheric and SST index values for the most recent 12 months. Atmospheric indices are standardized by the mean annual standard deviation except for the Tahiti and Darwin SLP anomalies which are in mb. SST indices (anomalies and means) are in degrees Celsius. Note that positive (negative) values of the 200 mb Zonal Wind Index imply westerly (easterly) anomalies; positive (negative) values of the 850 mb Zonal Wind Indices imply easterly (westerly) anomalies.